Thermophysical Properties of High Temperature Solid Materials

VOLUME 4: OXIDES AND THEIR SOLUTIONS AND MIXTURES Part II: Solutions and Their Mixtures of Simple Oxygen Compounds, Including Glasses and Ceramic Glasses

Thermophysical Properties Research Center, Purdue University

Y. S. TOULOUKIAN, Editor

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CONTRIBUTORS

G. C. Y. Wang, PROJECT COORDINATOR

E. H. Buyco	*Specific Heat*
R. S. Hernicz and R. L. Feng	*Thermal Linear Expansion*
J. J. G. Hsia and G. C. Y. Wang	*Thermal Conductivity*
C. K. Hsieh, I. M. Yeyinmen, J. J. G. Hsia, and I. Keskin	*Thermal Radiative Properties*
I. Keskin and C. Y. Lee	*Melting Point*
C. Y. Lee	*Vapor Pressure, Density, and Heats of Transformation*
G. C. Y. Wang	*Thermal Diffusivity*
G. C. Y. Wang and C. Y. Lee	*Electrical Resistivity*

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PREFACE

The phenomenal growth of science and technology since the early forties has brought about a universal appreciation of the fact that present limitations in many technical developments are often a direct result of the paucity of knowledge on the properties of materials. Engineering developments in the years ahead will be closely linked to the research that is done today to contribute to a better understanding of the properties of matter, of which thermophysical properties constitute a major segment.

With a realization of the seriousness of this situation, a great deal of research effort has been made in recent years on the thermophysical properties of materials with the result that the volume of research literature has increased many fold. In spite of this fact, it is generally agreed that the present level of research on thermophysical properties still falls substantially short of existing needs and anticipated future demands. However, what is even more disturbing is the fact that engineering groups across the nation are using no more than a fraction of the information already available, either because it is in a form not directly useful to them or, often, because its existence is not generally known.

To partially remedy this situation concerning the thermophysical properties of high temperature materials, the Materials Laboratory of the U.S. Air Force at Wright-Patterson Air Force Base sponsored a project in 1957 to bring together a large portion of the then available data in a single work for easy reference. From this compilation, performed by the Armour Research Foundation, a four-volume work entitled *Handbook of Thermophysical Properties of Solid Materials* emerged. It was first published in 1960 as WADC TR58-476; in 1961 it was issued as a hard-bound set by The Macmillan Company.

Because of the favorable reception given to this original work, the Materials Laboratory of the U.S. Air Force requested the Thermophysical Properties Research Center (TPRC), in 1964, to update and revise this reference work in order to increase its usefulness and to put it on a more current basis. The present six-volume work, entitled *Thermophysical Properties of High Temperature Solid Materials*, consists of nine books totaling more than 8,500 pages. It is the result of a two-year project by TPRC. This new encyclopedic reference work cannot be called a revised edition of the earlier publication since nearly every page has been changed through major additions, corrections, and re-evaluation. An effort was made to adhere to the basic format of the earlier work. However, the organization of the material and the index to materials have been completely redesigned for greater ease in locating the information desired.

Inevitably, not all of the properties covered have received the same degree of attention. The material on thermal radiative properties, thermal diffusivity, and specific heat has been totally revised and rewritten. Materials on the coefficient of thermal expansion and thermal conductivity have received major revisions, and those on electrical resistivity, density, and melting point have had moderate revisions. Finally, lesser revisions were made to data concerning vapor pressure and heats of transformation. The new information incorporated into the work covered research conducted primarily during the years 1957 to 1964, although some major references are included from 1965 and some from as far back as 1910.

In processing the large amount of new and old data incorporated in these volumes, it was necessary that some degree of selectivity be exercised both from the standpoint of the references cited and the data extracted from them. It is hoped, however, that no major source of information has been omitted. Whenever possible, an effort was made to suggest recommended values of the properties. In the plots, recommended values are indicated by curves. It should be clear, however, that the designation of "recommended values" in no way implies that a critical analysis has been performed in all cases, nor does it suggest that they repre-

sent definitive values. Because most of the materials covered are not well-defined engineering materials, and because there is often a great paucity of information, any critical evaluation of these data is most difficult—if not impossible.

With a full appreciation of these inherent difficulties it is nevertheless hoped that the present compendia will prove to be of great usefulness to engineers seeking information on thermophysical properties. In spite of the extreme care exercised in processing the data and proofing the manuscript, it is possible that some errors might have been inadvertently overlooked. Should any instance of such oversight be uncovered, the Editor would be most indebted if it is brought to his attention.

The fact that such an enormous undertaking could be accomplished in such a short time is attributable primarily to TPRC's unique resources in the area of thermophysical properties information. Grateful acknowledgment is made to the Electronic Properties Information Center for assistance in providing bibliographic searches on electrical resistivity and to the Air Force Materials Laboratory for general assistance in bibliographic information. Extensive personal inquiries were made to the authors of research papers and reports requesting clarification and original data. The enthusiastic response to these inquiries (in the majority of the cases) is also gratefully acknowledged. The Editor and the contributing staff wish to give a special note of thanks in acknowledging the valuable assistance and cooperation they received individually and collectively from TPRC's Scientific Documentation Division personnel and the supporting staff of graphics and technical typists without whose painstaking and skillful contributions this work would not have been possible.

This work was performed under Contract No. AF33(615)1642, sponsored by the Air Force Materials Laboratory, Research and Technology Division, Air Force Systems Command, Wright-Patterson Air Force Base, Ohio. The personnel directly affiliated with this program were Mr. D. A. Shinn, Chief, Materials Information Branch; Mr. E. Dugger, Technical Manager, Information Processing; and Mr. J. H. Charlesworth, engineer in charge of this project. Their understanding cooperation has contributed much to the success of the program.

It is sincerely hoped that *Thermophysical Properties of High Temperature Solid Materials* will constitute an even more valuable contribution to technology than its predecessor. This work should prove to be an invaluable source of information on an important group of properties of materials to every engineer, providing him with reliable information of a scope that would be impossible for any one individual to master. If we have been able to approach these goals, the results will be highly gratifying.

June 1966

Y. S. Touloukian, Director
Thermophysical Properties Research Center
Purdue University
2595 Yeager Road
West Lafayette, Indiana 47906

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EXPLANATORY TEXT

I. SCOPE OF COVERAGE

Thermophysical Properties of High Temperature Solid Materials comprises six volumes. Volumes 2, 4, and 6 each consist of two parts because of the large amount of material covered. The general contents of the respective volumes are as follows:

Volume 1—Elements
Volume 2—Nonferrous Alloys
  PART I—Nonferrous Binary Alloys
  PART II—Nonferrous Multiple Alloys
Volume 3—Ferrous Alloys
Volume 4—Oxides and Their Solutions and Mixtures
  PART I—Simple Oxygen Compounds and Their Mixtures
  PART II—Solutions and Their Mixtures of Simple Oxygen Compounds, Including Glasses and Ceramic Materials
Volume 5—Nonoxides and Their Solutions and Mixtures, Including Miscellaneous Ceramic Materials
Volume 6—Intermetallics, Cermets, Polymers, and Composite Systems
  PART I—Intermetallics
  PART II—Cermets, Polymers, and Composite Systems

The specific properties covered in each volume are:

1. Density (ρ)
2. Melting Point (M. P.)
3. Heat of Fusion (Δh_f)
4. Heat of Vaporization (Δh_v)
5. Heat of Sublimation (Δh_s)
6. Electrical Resistivity (r)
7. Specific Heat at Constant Pressure (c_p)
8. Thermal Conductivity (k)
9. Thermal Diffusivity (α)
10. Thermal Linear Expansion ($\Delta L/L$)
11. Thermal Radiative Properties:
    Absorptance (α), Emittance (ϵ), Reflectance (ρ), and Transmittance (τ)
12. Vapor Pressure (p)

Generally, only materials with melting points above 800°K (approximately 1000°F) are included, except for materials within the categories of polymers, plastics, and composites. A detailed discussion of the material classification procedure is presented in the following sections. A Material Index for the entire work is included at the end of each volume.

II. TPRC CLASSIFICATION OF MATERIALS

Materials are classified into the eight categories listed below. Whenever applicable, the compositions are reported in weight percent of the constitutents. For purposes of material classification TPRC considers the following elements as nonmetallic: H, He, C, N, O, F, Ne, P, S, Cl, A, Br, Kr, I, Xe, At, and Rn.

1. *Elements*: For the purpose of classification an element is specified as follows:
   - A. For metallic elements, the limit of impurities is <0.20 percent for each foreign constituent and <0.50 percent total impurities.
   - B. For nonmetallic elements (i.e., carbon including graphite and diamond), the limit of impurities is ≤2.0 percent for each foreign constituent and ≤5.0 percent total impurities.
2. *Nonferrous Alloys*: This category is for alloys in which the major constituent is other than iron. For the purpose of classification, nonferrous alloys are specified as follows:
   - A. Nonferrous Binary Alloys: The sum of the binary constituents is ≥99.50 percent and other constituents ≤0.20 percent each.
   - B. Nonferrous Multiple Alloys: The sum of the first two constituents is <99.50 percent and/or any other constituent >0.20 percent. Alternatively, the major constituent is ≤99.50 percent and each of the other constituents <0.20 percent (or not given).
3. *Ferrous Alloys*: This category is for alloys in which iron is greater than or equal to any other constituent. For the purpose of classification, ferrous alloys are specified as follows:
   - A. Carbon Steels: Carbon ≤2.0 percent and carbon ≥ any other alloying constituent.
     - a. Group I: Every other alloying constituent is ≤0.20 percent except for Mn, P, S, Si, which may be ≤0.60 percent each.
     - b. Group II: At least one other alloying constituent >0.20 percent and/or any of Mn, P, S, Si >0.60 percent.
   - B. Cast Irons: Carbon >2.0 percent and carbon ≥ any other alloying constituent.
     - a. Group I: Every other alloying constituent ≤0.20 percent except for Mn, P, S, Si, which may be ≤0.60 percent each.
     - b. Group II: At least one other alloying constituent >0.20 percent and/or any of Mn, P, S, Si >0.60 percent.
   - C. Alloy Steels (including alloy cast iron): The major alloying constituent is other than carbon.
     - a. Group I: Every other alloying constituent ≤0.20 percent except for Mn, P, S, Si, which may be ≤0.60 percent each, and C ≤2.0 percent.*
     - b. Group II: At least one other alloying constituent >0.20 percent and/or any of Mn, P, S, Si >0.60 percent.*
4. *Nonmetallic Compounds and Their Mixtures and Solutions*: Ceramic materials such as oxides, bromides, carbides, carbonates, nitrides, silicates, etc., are included in this category. For the purpose of classification, they are specified as follows:
   - A. For simple compounds and their solutions, the limit of impurities is ≤2.0 percent for each foreign constituent and ≤5.0 percent total impurities.

---

* Exception is made when Mn, P, S, or Si is the major alloying constituent. For instance, in the case of Fe + Mn + ΣX_i alloys the specifications corresponding to Groups I and II would be as follows:

  a. Group I: Every other alloying constituent ≤0.20 percent except for P, S, Si, which may be ≤0.60 percent each, and C ≤2.0 percent.

  b. Group II: At least one other alloying constituent >0.20 percent and/ any of P, S, Si >0.60 percent.

In the above example, Mn has a higher weight percentage than any of P, S, or Si but does not necessarily have a weight percentage higher than 0.60 percent. Thus, the limits of Mn percentage may be written:

$$Fe \geq Mn > P, S, Si \text{ and any other alloying constituent and } Mn \geq 0.20.$$

The same guideline is applied to ferrous alloys containing P, S, or Si as major alloying constituents.

B. For mixtures of simple compounds and their solutions, the major constituent is <95.0 percent, or any other constituent is >2.0 percent.

5. *Intermetallics*: An intermetallic is a metal-metal compound formed by metallic elements in a fixed simple atomic ratio. For the purpose of classification, specifications are the same as those for Class 4.

6. *Cermets*: Cermets are ceramic materials such as carbides, oxides, etc., fused with or bonded by one or more pure metals. However, there are also metal-metal cermets, metal-intermetallic cermets, etc., which are also included in this category.

7. *Polymers*: Polymers are chemical compounds or mixtures of compounds formed by polymerization and consisting essentially of repeating molecular structural units.

8. *Composite Systems*: A composite system may consist of materials in combination, with clearly defined boundaries existing between components of the system, or a homogeneous material having a distinct configuration.

For the reader's convenience, the classification scheme for Classes 1 through 4, described above, is summarized in the following table.

SUMMARY TABLE OF TPRC CLASSIFICATION OF MATERIALS

Classification		Limits of Composition (weight percent) X_1	$X_1 + X_2$	X_2	X_3
1. ELEMENTS	A. METALLIC	>99.50	--	<0.20	<0.20
	B. NONMETALLIC	≥ 95.0	--	≤ 2.0	≤ 2.0
2. NONFERROUS ALLOYS ($X_1 > Fe$)	A. BINARY ALLOYS	--	≥ 99.50	≥ 0.20	≤ 0.20
	B. MULTIPLE ALLOYS	--	≥ 99.50	>0.20	>0.20
		--	<99.50	≥ 0.20	≤ 0.20
		--	<99.50	>0.20	>0.20
		≤ 99.50	--	<0.20	<0.20

Classification			X_1	X_2	X_3	Mn, P S or Si
3. FERROUS ALLOYS ($X_1 = Fe \geq X_2$)	A. CARBON STEELS	GROUP I	Fe	C ≤ 2.0	≤ 0.20	≤ 0.60
		GROUP II	Fe	C ≤ 2.0	≤ 0.20	>0.60
			Fe	C ≤ 2.0	>0.20	≤ 0.60
			Fe	C ≤ 2.0	>0.20	>0.60
	B. CAST IRONS	GROUP I	Fe	C >2.0	≤ 0.20	≤ 0.60
		GROUP II	Fe	C >2.0	≤ 0.20	>0.60
			Fe	C >2.0	>0.20	≤ 0.60
			Fe	C >2.0	>0.20	>0.60
	C. ALLOYS* STEELS	GROUP I	Fe	$\neq$ C	≤ 0.20 and C ≤ 2.0	≤ 0.60
		GROUP II	Fe	$\neq$ C	≤ 0.20	>0.60
			Fe	$\neq$ C	>0.20	≤ 0.60
			Fe	$\neq$ C	>0.20	>0.60

4. NONMETALLIC COMPOUNDS AND THEIR MIXTURES AND SOLUTIONS

	X_1	X_2
A. SIMPLE COMPOUNDS AND THEIR SOLUTIONS	≥ 95.0	≤ 2.0
B. MIXTURES OF SIMPLE COMPOUNDS AND THEIR SOLUTIONS	<95.0	≤ 2.0
	≥ 95.0	>2.0
	<95.0	>2.0

NOMENCLATURE:

X_1 = Major Constituent

X_2 = Second Highest Constituent

X_3 = Third Highest Constituent

Where: $X_1 \geq X_2 \geq X_3 \geq X_4 \geq \cdots\cdots$

*In case Mn, P, S, or Si represents X_2 this particular element is dropped from the last column.

III. PRESENTATION OF DATA

Each of the six volumes consists of seven sections arranged in the following order:

1. Preface
2. Table of Contents
3. Explanatory Text
4. Conversion Factors
5. Body of Data
6. References
7. Material Index.

In the following paragraphs a detailed description of Sections 5, 6, and 7 is given. The contents of the first four sections are self-explanatory.

BODY OF DATA

Data on each material are presented in graphical or tabular form for selected sets of measurements, and are accompanied by a Reference Information Table with corresponding specifications and remarks. The first five properties listed in Section I of this Explanatory Text are considered as *point values* and are grouped together in a single table in the same manner as the graphs for the other remaining properties. Furthermore, for a given material group, where several properties are reported, data are arranged in accordance with the order of the property list given in Section I of this text.

Graphic Presentation

Data extracted from various references on a given material and property are shown on a single graph by means of distinct plotting symbols, which are identified in the Reference Information Table on the page following the graph. Each set of symbols indicates the data of a given investigator, but does not necessarily imply actual measured points. In numerous instances authors present only smoothed values, either in graphical or tabular form, and it is frequently impossible to distinguish interpolated or smoothed values from actual observed data.

In reporting data on thermal linear expansion, investigators sometimes give a single average value of this property for a considerable temperature range. In such instances it is assumed that a linear relationship is implied. All data on thermal linear expansion were reduced to a datum of 293°K (20°C); i.e., $(\Delta L/L) = 0$ at 293°K (20°C). This point is identified by a cross (+) on each graph.

The definition of $(\Delta L/L)$ used in this work is

$$(\Delta L/L) = \frac{L_T - L_{293}}{L_{293}} \times 100$$

where L_T = length of specimen at temperature T.

L_{293} = length of specimen at 293°K (20°C).

To compute the "coefficient" of thermal linear expansion β from 293°K to any temperature T, the following relation may be used.*

$$\beta = \frac{1}{100\,(T - 293)} \frac{\Delta L}{L}, \text{ in } K^{-1}$$

* It is necessary to divide the right-hand side of this equation by 100 because the graphical presentation of $(\Delta L/L)$ is in percent expansion from 293°K.

In some instances the coefficient of thermal linear expansion is reported in tabular form.

Curves drawn through the plotted points are the "most probable" curves based on the data shown. As additional information becomes available in the future, these recommendations may well be modified.

Point Value Table

Data extracted from various references are identified by distinct symbols in the same manner as data points on a graph. "Most probable" values are given either at the top of the table or are indicated in a footnote. These selections are usually made solely on the basis of the data presented. Sometimes these point values are also reported as a function of temperature or composition, in which case they are shown in graphical form and placed immediately following the tabular values.

Reference Information Table

A table giving the reference information associated with each set of data obtained in the graph immediately follows the graph. The table contains the following information:

1. Symbol. The plotting symbols are identical with and correspond to those used in the graph.
2. Reference. References are identified by hyphenated numbers which serve to locate the bibliographic citation in the section of References at the end of each volume. The initial two digits indicate the year of publication and the last digits identify the specific reference within the given year. In those instances where a reference does not carry a date, the letter symbol ND is used in place of the year of publication. Undated references are listed at the end of the list of References.
3. Temperature Range. Range covered by the data in a given paper or report.
4. Reported Error. The author's estimated accuracy (or precision).
5. Sample Specification. This column contains all pertinent available information about the test sample. This information consists of the following:
   a. Commercial trade name, chemical formula, etc., followed by manufacturer's name, if it is necessary for correct identification.
   b. Composition of the sample, expressed in weight percent. Unless otherwise stated, the percent sign is omitted.
   c. Physical characteristics of the material, such as a single crystal, polycrystalline, density, crystal structures, etc.
   d. Specimen designation by the author is given in brackets at the end of the citation.
6. Remarks. This column contains information on:
   a. Special process used in fabrication of the sample, such as being sintered, chill-cast, etc.
   b. Sample history, such as cold-worked, hot-pressed, annealed, etc.
   c. Conditions under which the specimen was investigated, environment, etc.
   d. Other pertinent remarks.

REFERENCES

The section on Reference gives complete bibliographic citations for all the references from which data were extracted. They are arranged chronologically by year of publication, and in arbitary sequence within any given year.

For the preparation of the references, the following order and convention is used.

Periodicals

1. Author(s) name: Last name first, followed by initials.
2. Journal name: Standard TPRC journal name abbreviations are used.
3. Series, volume, and number.

a. If the series is represented by a letter, it is underlined together with the volume number.
b. If the series is represented by a number, then only the numeral representing the volume is underlined.
c. The numeral for the issue number is shown in parentheses.

4. Pages: Indicate the beginning and ending pages.

Reports

1. Author(s) name is given in the same form as for periodicals.
2. The name of the responsible organization, if any.
3. The name of sponsor.
4. Report, bulletin, or circular designation.
5. Number.
6. Part.
7. Pages (same as for periodicals)
8. AD and PB numbers or equivalents.

Books

The bibliographic citation for books lists: author(s), title, volume, edition, publisher, and page(s).

In general, private communications are not listed as references. However, if TPRC did obtain additional substantive information from an author through private communication, and if this information was used, the remark "additional data obtained from author(s)" is added at the end of the reference citation.

MATERIAL INDEX

The Material Index lists all the materials included in this work by their proper trade or commercial names arranged in alphabetical order and, for materials designated by number codes, the listing is in increasing numerical order. Location of information on a particular property for a particular material is specified by the volume number and page numbers indicated within the appropriate property column of the index. The page number always indicates the starting page of the graphs or point value tables. Chemical formulas are given in parentheses following the proper names of materials which can be chemically identified. However, for materials within a general group, e.g., different oxides of cerium, the entries are only by chemical formulas listed under the material group designation, such as "cerium oxides." Whenever applicable, an effort is made to list commercial materials under their several accepted names. In the case of broad classes of materials, such as steels, glasses, etc., the materials are listed under their common names as well as under the heading of their general class when the designation is merely a letter and number code.

Simpler inorganic compounds (e.g., aluminum oxide, tantalum boride) are named according to the convention given in the *Handbook of Chemistry and Physics* (The Chemical Rubber Co., 45th edition, 1964, and—if not available there—the 43rd edition, 1962). Other inorganic compounds are generally named in accordance with the convention given in the *Chemical Abstracts* by giving the more electropositive part of the name first and the more electronegative part second. For nonferrous and ferrous alloys, only the first two components are listed and ΣX_i is added to designate multiple alloys. An exception is made, however, for chromium-nickel and nickel-chromium ferrous alloys, in which cases, all three major constituents are listed. For other inorganic compounds and their mixtures and solutions, all components with weight percent greater than 2 percent are listed. Finally, for cermets, the name of the ceramic part is given first and the metal part second, each in their respective alphabetical order regardless of their weight percentages, with the exception of beryllium cermet (e.g., Beryllium YB-9052), in which case the name of the metal part is given first.

CONVERSION FACTORS

NOTE: In preparing the conversion factors, the following basic definitions were used:

1 in. = 2.54 cm*

1 lb. = 453.59237 g*

1 cal_{Th} = 4.184 (exactly) Joule*

1 cal_{IT} = 4.1868 (exactly) Joule*

1 $Btu_{IT}lb^{-1}F^{-1}$ = 1 $cal_{IT}g^{-1}C^{-1}$‡

The subscripts "Th" and "IT" denote "Thermochemical" and "International Steam Table" units, respectively.

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* *NBS Technical News Bulletin*, 47(10), 1963.

‡ Mueller, E. F., and Rossini, F. D., *Am. J. Physics*, 12(1), 4, 1944.

CONVERSION FACTORS FOR UNITS OF DENSITY

MULTIPLY ↓ by appropriate factor to OBTAIN →	$g\ cm^{-3}$	$g\ in.^{-3}$	$kg\ m^{-3}$	$kg\ ft^{-3}$	$lb\ in.^{-3}$	$lb\ ft^{-3}$
$g\ cm^{-3}$	1	1.63872×10	1.0×10^{3}	2.83170×10	3.61275×10^{-2}	6.24283×10
$g\ in.^{-3}$	6.10234×10^{-2}	1	6.10234×10	1.72800	2.20462×10^{-3}	3.80959
$kg\ m^{-3}$	1.0×10^{3}	1.63872×10^{-2}	1	2.83170×10^{-2}	3.61275×10^{-5}	6.24283×10^{-2}
$kg\ ft^{-3}$	3.51446×10^{-2}	5.78704×10^{-1}	3.53145×10	1	1.27582×10^{-3}	2.20462
$lb\ in.^{-3}$	2.76797×10	4.53592×10^{2}	2.76797×10^{4}	7.83808×10^{2}	1	1.72800×10^{3}
$lb\ ft^{-3}$	1.60184×10^{-2}	2.62496×10^{-1}	1.60184×10	4.53592×10^{-1}	5.78704×10^{-4}	1

CONVERSION FACTORS FOR UNITS OF LATENT HEAT

MULTIPLY ↓ by appropriate factor to OBTAIN →	$cal_{Th}g^{-1}$	$cal_{IT}g^{-1}$	$W\ sec\ g^{-1}$	$J_{Int}g^{-1}$	$Btu_{Th}lb^{-1}$	$Btu_{IT}lb^{-1}$
$cal_{Th}g^{-1}$	1	9.99331×10^{-1}	4.184	4.18331	1.8	1.79880
$cal_{IT}g^{-1}$	1.00067	1	4.1868	4.18611	1.80120	1.8
$W\ sec\ g^{-1}$	2.39006×10^{-1}	2.38846×10^{-1}	1	9.99835×10^{-1}	4.30210×10^{-1}	4.29923×10^{-1}
$J_{Int}g^{-1}$	2.39045×10^{-1}	2.38885×10^{-1}	1.00017	1	4.30281×10^{-1}	4.29994×10^{-1}
$Btu_{Th}lb^{-1}$	5.55556×10^{-1}	5.55184×10^{-1}	2.32444	2.32406	1	9.99331×10^{-1}
$Btu_{IT}lb^{-1}$	5.55927×10^{-1}	5.55556×10^{-1}	2.326	2.32562	1.00067	1

CONVERSION FACTORS FOR UNITS OF SPECIFIC HEAT

MULTIPLY by appropriate factor to OBTAIN →	$cal_{Th} g^{-1} C^{-1}$	$cal_{IT} g^{-1} C^{-1}$	$W\ sec\ g^{-1} K^{-1}$	$J_{Int} g^{-1} K^{-1}$	$Btu_{Th} lb^{-1} F^{-1}$	$Btu_{IT} lb^{-1} F^{-1}$
$cal_{Th} g^{-1} C^{-1}$	1	9.99331×10^{-1}	4.184	4.18331	1	9.99331×10^{-1}
$cal_{IT} g^{-1} C^{-1}$	1.00067	1	4.1868	4.18611	1.00067	1
$W\ sec\ g^{-1} K^{-1}$	2.390006×10^{-1}	2.38846×10^{-1}	1	9.99835×10^{-1}	2.39006×10^{-1}	2.38846×10^{-1}
$J_{Int} g^{-1} K^{-1}$	2.39045×10^{-1}	2.38885×10^{-1}	1.00017	1	2.39045×10^{-1}	2.38885×10^{-1}
$Btu_{Th} lb^{-1} F^{-1}$	1	9.99331×10^{-1}	4.184	4.18331	1	9.99331×10^{-1}
$Btu_{IT} lb^{-1} F^{-1}$	1.00067	1	4.1868	4.18611	1.00067	1

Note: To convert quantities per "gram" to "mol" basis multiply conversion factor by the molecular weight M.

CONVERSION FACTORS FOR UNITS OF THERMAL CONDUCTIVITY

MULTIPLY ↓ by appropriate factor to OBTAIN →	$Btu_{IT}\,hr^{-1}ft^{-1}\,F^{-1}$	$Btu_{IT}\,in.\,hr^{-1}ft^{-2}F^{-1}$	$cal_{IT}\,sec^{-1}cm^{-1}\,C^{-1}$	$cal_{Th}\,sec^{-1}cm^{-1}\,C^{-1}$	$kcal_{Th}\,hr^{-1}\,m^{-1}\,C^{-1}$	$W\,cm^{-1}\,K^{-1}$
$Btu_{IT}\,hr^{-1}ft^{-1}\,F^{-1}$	1	1.2×10	4.13379×10^{-3}	4.13656×10^{-3}	1.48916	1.73073×10^{-2}
$Btu_{IT}\,in.\,hr^{-1}ft^{-2}\,F^{-1}$	8.33333×10^{-2}	1	3.44482×10^{-4}	3.44713×10^{-4}	1.24097×10^{-1}	1.44228×10^{-3}
$cal_{IT}\,sec^{-1}cm^{-1}\,C^{-1}$	2.41909×10^{2}	2.90291×10^{3}	1	1.00067	3.60241×10^{2}	4.1868
$cal_{Th}\,sec^{-1}cm^{-1}\,C^{-1}$	2.41747×10^{2}	2.90096×10^{3}	9.99331×10^{-1}	1	3.6×10^{2}	4.184
$kcal_{Th}\,hr^{-1}\,m^{-1}\,C^{-1}$	6.71520×10^{-1}	8.05824	2.77592×10^{-3}	2.77778×10^{-3}	1	1.16222×10^{-2}
$W\,cm^{-1}\,K^{-1}$	5.77789×10	6.93347×10^{2}	2.38846×10^{-1}	2.39006×10^{-1}	8.60421×10	1

CONVERSION FACTORS FOR UNITS OF THERMAL DIFFUSIVITY

MULTIPLY ↓ by appropriate factor to OBTAIN →	cm^2sec^{-1}	cm^2hr^{-1}	m^2hr^{-1}	$in.^2sec^{-1}$	ft^2sec^{-1}	ft^2hr^{-1}
cm^2sec^{-1}	1	3.60×10^3	3.60×10^{-1}	1.550×10^{-1}	1.07639×10^{-3}	3.87501
cm^2hr^{-1}	2.77778×10^{-4}	1	1.0×10^{-4}	4.30556×10^{-5}	2.98998×10^{-7}	1.07639×10^{-3}
m^2hr^{-1}	2.77778	1.0×10^4	1	4.30556	2.98998×10^{-3}	1.07639×10
$in.^2sec^{-1}$	6.45160	2.32258×10^4	2.32258	1	6.94444×10^{-3}	2.50×10
ft^2sec^{-1}	9.29030×10^2	3.34451×10^6	3.34451×10^2	1.440×10^2	1	3.60×10^3
ft^2hr^{-1}	2.58064×10^{-1}	9.29030×10^2	9.29030×10^{-2}	4.0×10^{-2}	2.77778×10^{-4}	1

CONVERSION FACTORS FOR UNITS OF VAPOR PRESSURE

MULTIPLY by appropriate factor to OBTAIN →	dyne cm^{-2}	atm	kg cm^{-2}	mm Hg	in. Hg	lb in. $^{-2}$
dyne cm^{-2}	1	9.8690×10^{-7}	1.01970×10^{-6}	7.5010×10^{-4}	2.9530×10^{-5}	1.45040×10^{-5}
atm	1.01330×10^{6}	1	1.03320	7.60×10^{2}	2.9920×10	1.46960×10
kg cm^{-2}	9.8070×10^{5}	9.6780×10^{-1}	1	7.3560×10^{2}	2.8960×10	1.42230×10
mm Hg	1.33320×10^{3}	1.31580×10^{-3}	1.35950×10^{-3}	1	3.9370×10^{-2}	1.93370×10^{-2}
in. Hg	3.3860×10^{4}	3.3420×10^{-2}	3.4530×10^{-2}	2.540×10	1	4.9120×10^{-1}
lb in. $^{-2}$	6.89470×10^{4}	6.80460×10^{-2}	7.0310×10^{-2}	5.1710×10	2.0360	1

OXIDES AND THEIR SOLUTIONS AND MIXTURES

PART II

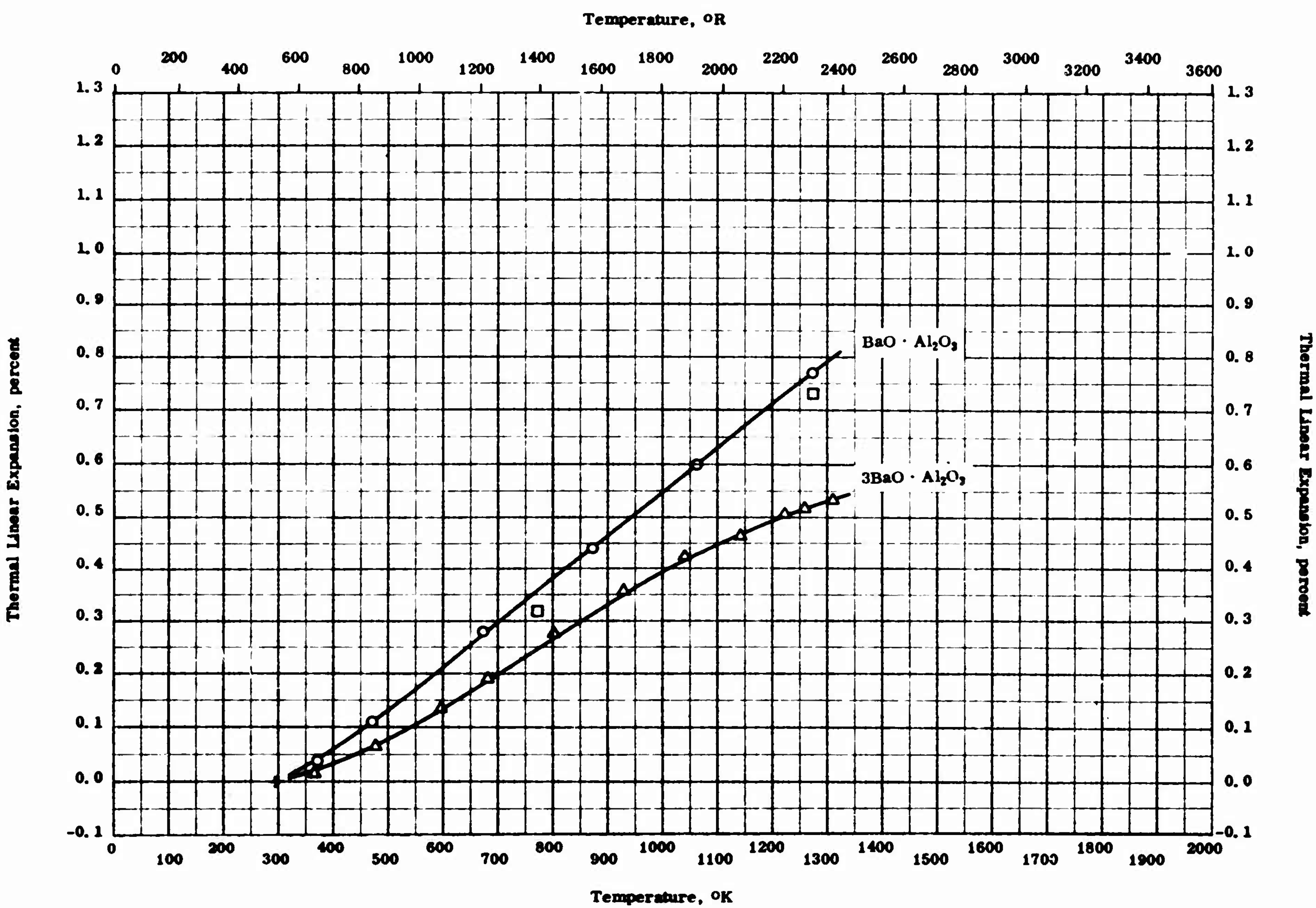
SOLUTIONS AND THEIR MIXTURES OF SIMPLE OXYGEN COMPOUNDS, INCLUDING GLASSES AND CERAMIC GLASSES

NOTE: For purposes of classification, solutions and their mixtures of simple oxygen compounds are specified as follows:

1. For solutions of simple oxygen compounds, the limit of impurities is ≤ 2.0 percent for each foreign constituent and ≤ 5.0 percent total impurities.

2. For their mixtures, excluding the case mentioned in Part I, the major constituent is < 95.0 percent, or any other constituent is > 2.0 percent.

Glasses and ceramic glass, not included in the above definitions, are classified according to their commercial classifications.

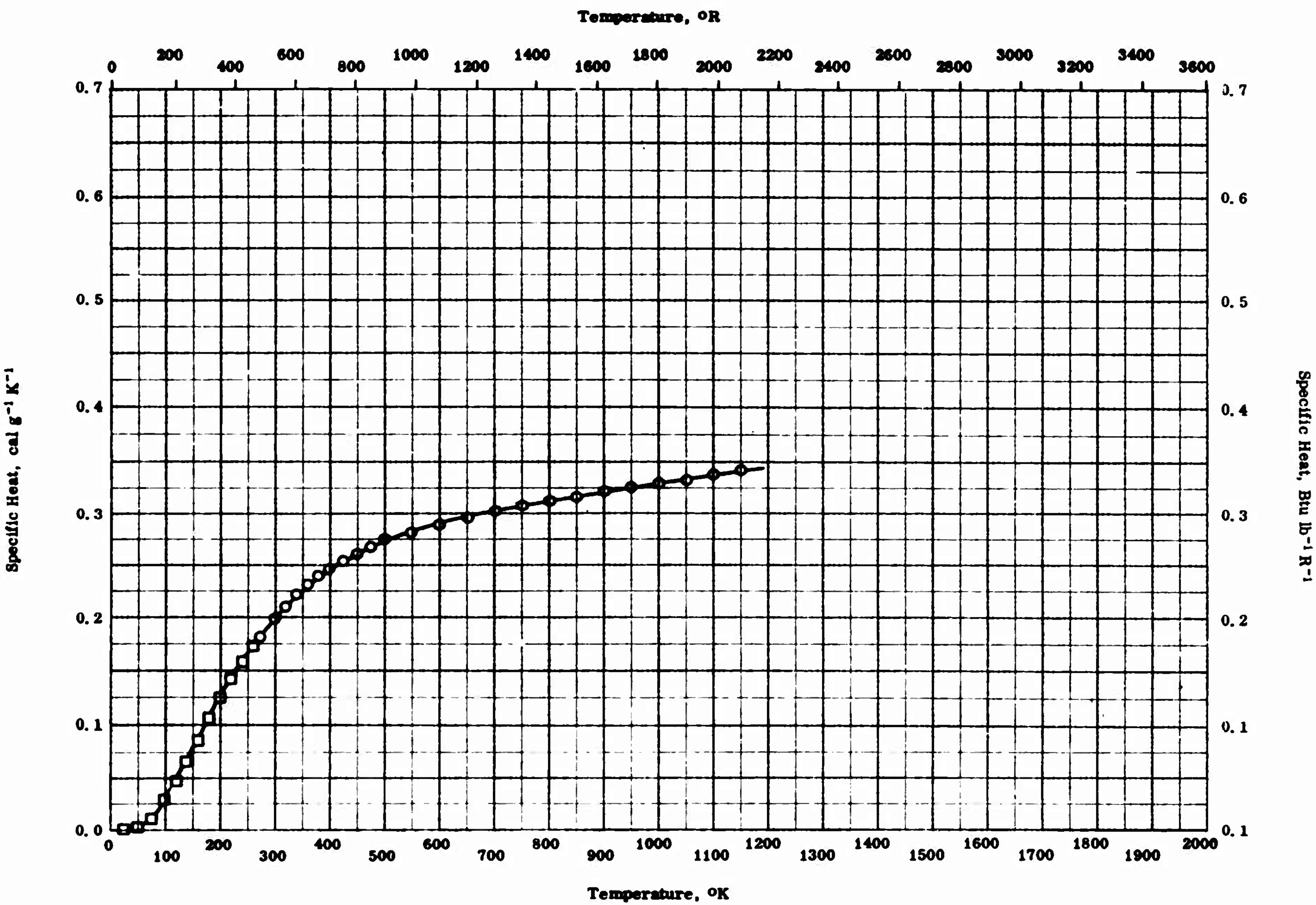


THERMAL LINEAR EXPANSION -- BARIUM ALUMINATES

THERMAL LINEAR EXPANSION -- BARIUM ALUMINATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	60-35	298-[illegible]73		$BaO \cdot Al_2O_3$.	
○	48-8	293-1273		$BaO \cdot Al_2O_3$.	Fired 1 hr at 1700 C.
△	60-36	300-1308	2	$3BaO \cdot Al_2O_3$; x-ray examination revealed presence of considerable $BaO \cdot Al_2O_3$ and BaO; dimensions 4-3/8 in. long by 7/16 in. square.	Prepared by milling $Ba(OH)_2 \cdot 8H_2O$ and Al_2O_3 together in 3:1 ratio, heated to 800 C, crushed and reground to -150 mesh, mixed with 15% binder solution (40 g Carbowax 20 M, 20 cm^3 of 2% Methocel solution and 40 cm^3 H_2O), pressed into test bars at 8000 psi, and fired at 1300 C for 4 hrs; measured with heating rate of 3 C min^{-1}.

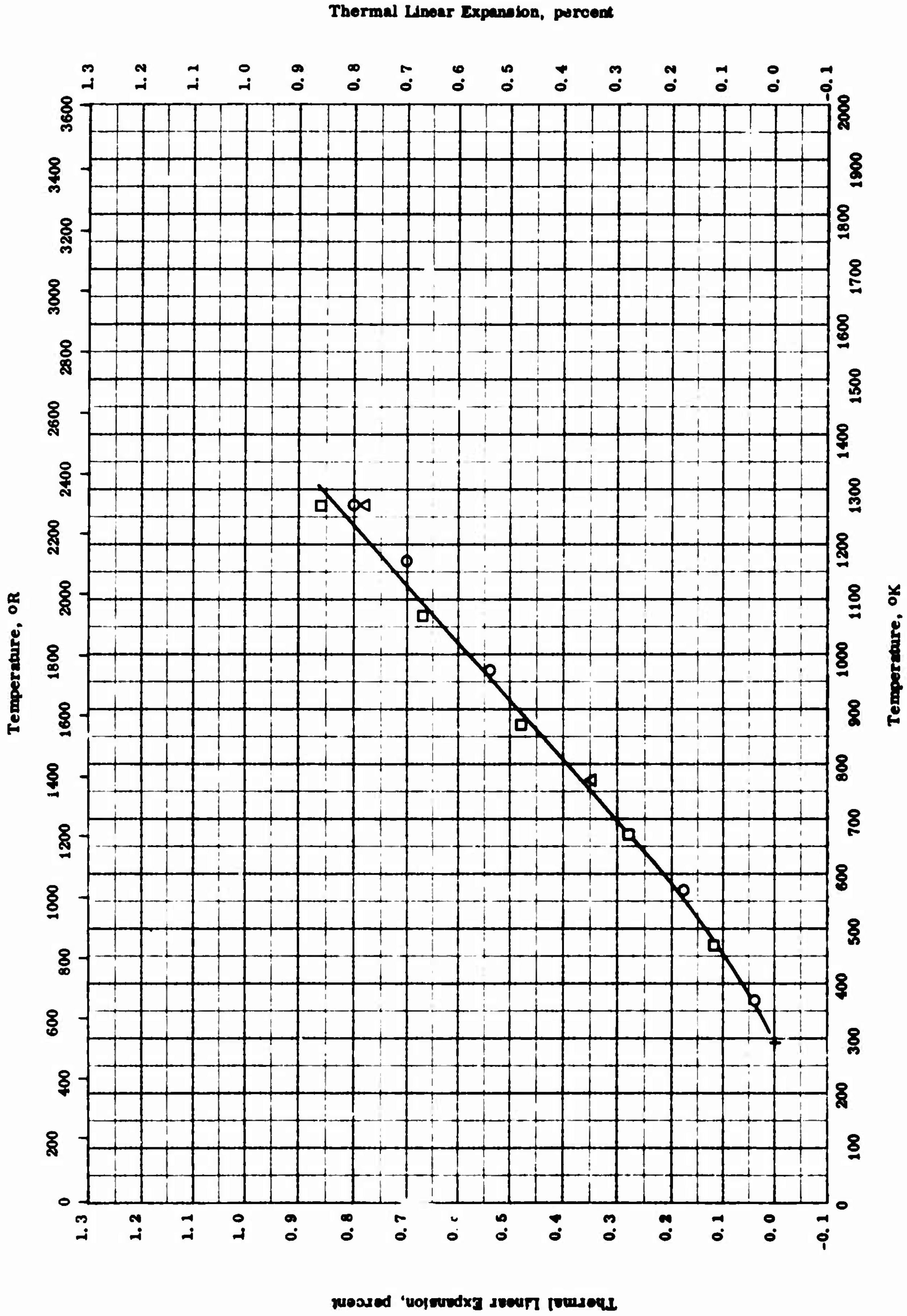


SPECIFIC HEAT -- BERYLLIUM ALUMINATE

SPECIFIC HEAT -- BERYLLIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	64-6	273-1150		$BeO \cdot Al_2O_3$; sample 1: 80.88 Al_2O_3 and 19.05 BeO; sample 2: 80.33 Al_2O_3 and 19.72 BeO.	Average of two samples.
□	64-6	5-373	0.5	$BeO \cdot Al_2O_3$; 80.33 Al_2O_3, 19.72 BeO; 0.01 > Si, 0.01 - 0.1 Cu, 0.01 - 0.1 Ni, 0.001 - 0.01 Cu, 0.001 - 0.01 Fe, 0.001 - 0.01 Mg, 0.001 > Pb, 0.001 > Sn, 0.0001 > Ag, and 0.0001 - 0.001 V.	

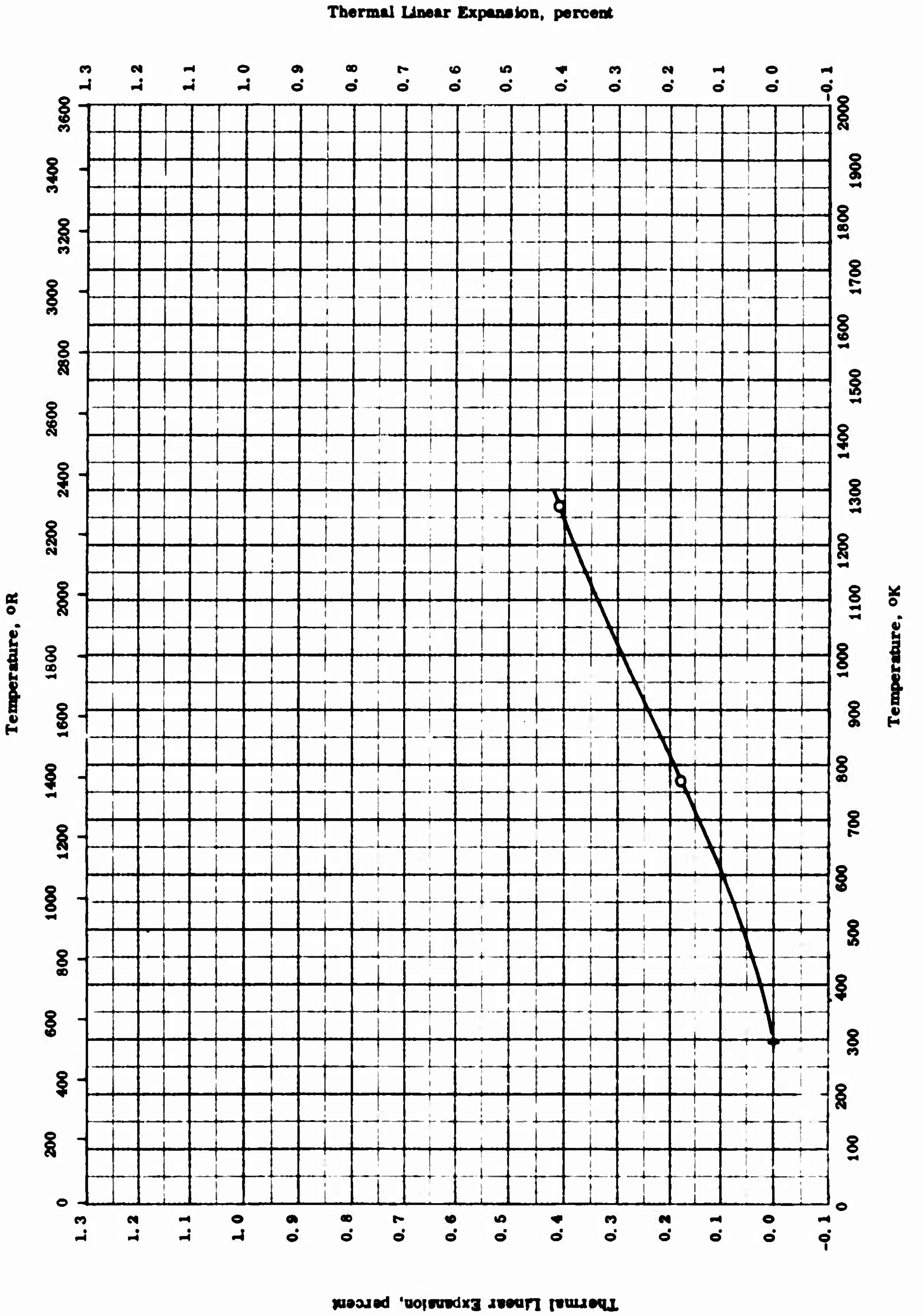


THERMAL LINEAR EXPANSION -- BERYLLIUM ALUMINATE

THERMAL LINEAR EXPANSION — BERYLLIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
△	60-35	298-1273		$BeO \cdot Al_2O_3$.	
○	48-7	293-1273		$BeO \cdot Al_2O_3$, chrysoberyl; nominal composition 80.3 Al_2O_3 and 19.7 BeO.	Fired 1 hr at 1500 C.
□	46-4	293-1273		$BeO \cdot Al_2O_3$, chrysoberyl; prepared from 99.7 pure BeO and 99^+ pure Al_2O_3.	



THERMAL LINEAR EXPANSION -- BORON ALUMINATE

THERMAL LINEAR EXPANSION -- BORON ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-35	298-1273		2 $B_2O_3 \cdot 9\ Al_2O_3$.	

PROPERTIES OF CALCIUM ALUMINATE

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density	2.90	181
Melting Point	2018	3633

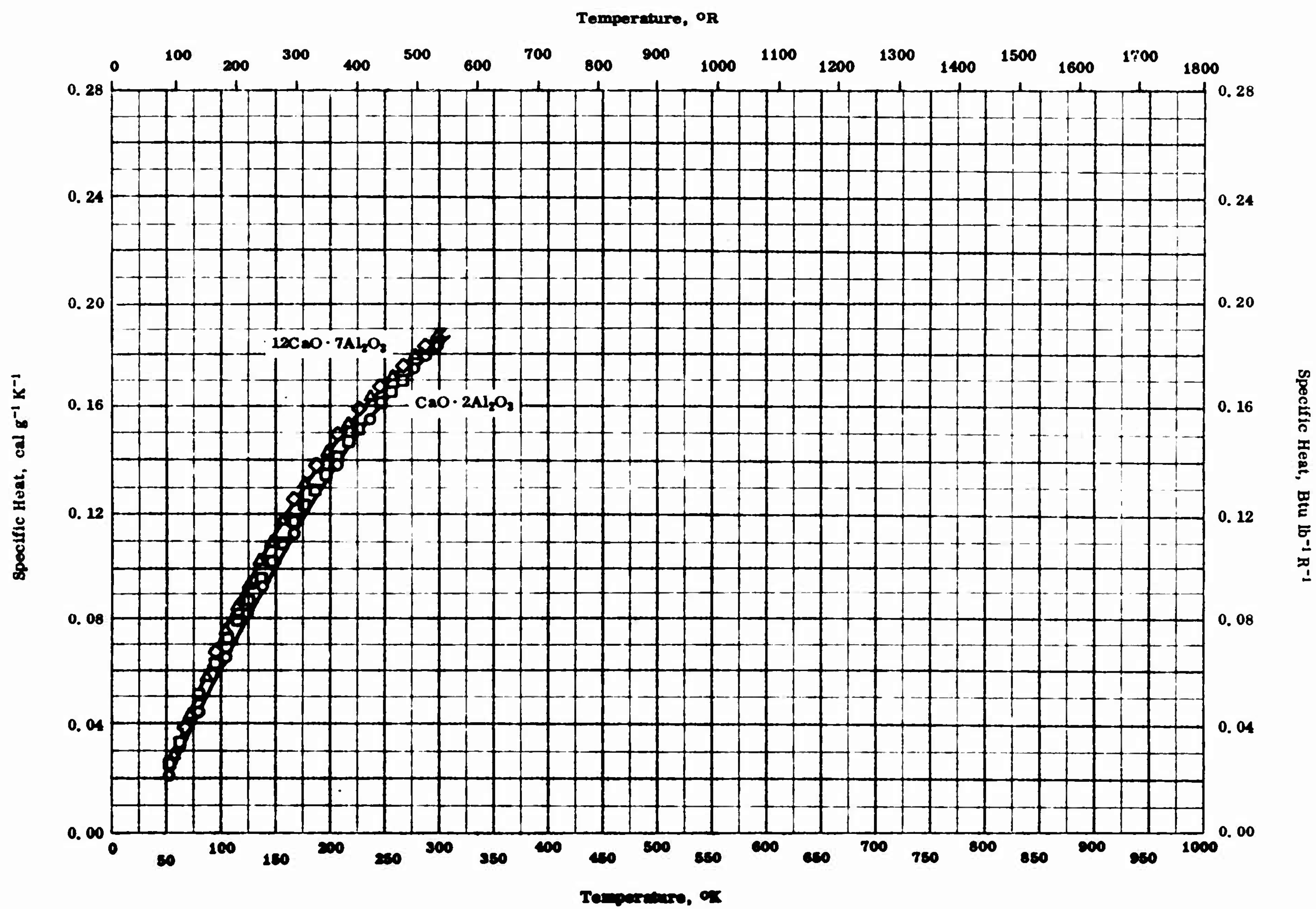
REPORTED VALUES

		$g\ cm^{-3}$	$lb\ ft^{-3}$
Density			
	□	2.90	181
Melting Point		K	R
	○	2018 ± 15	3633 ± 27
	△	2018 ± 15	3633 ± 27

PROPERTIES OF CALCIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-25	2000-2033		$CaO \cdot 2Al_2O_3$; single crystal.	
△	56-22	2000-2033		$CaO \cdot 2Al_2O_3$.	Observation of first liquid drop on V-shaped ribbon
□	56-22	298		Same as above.	

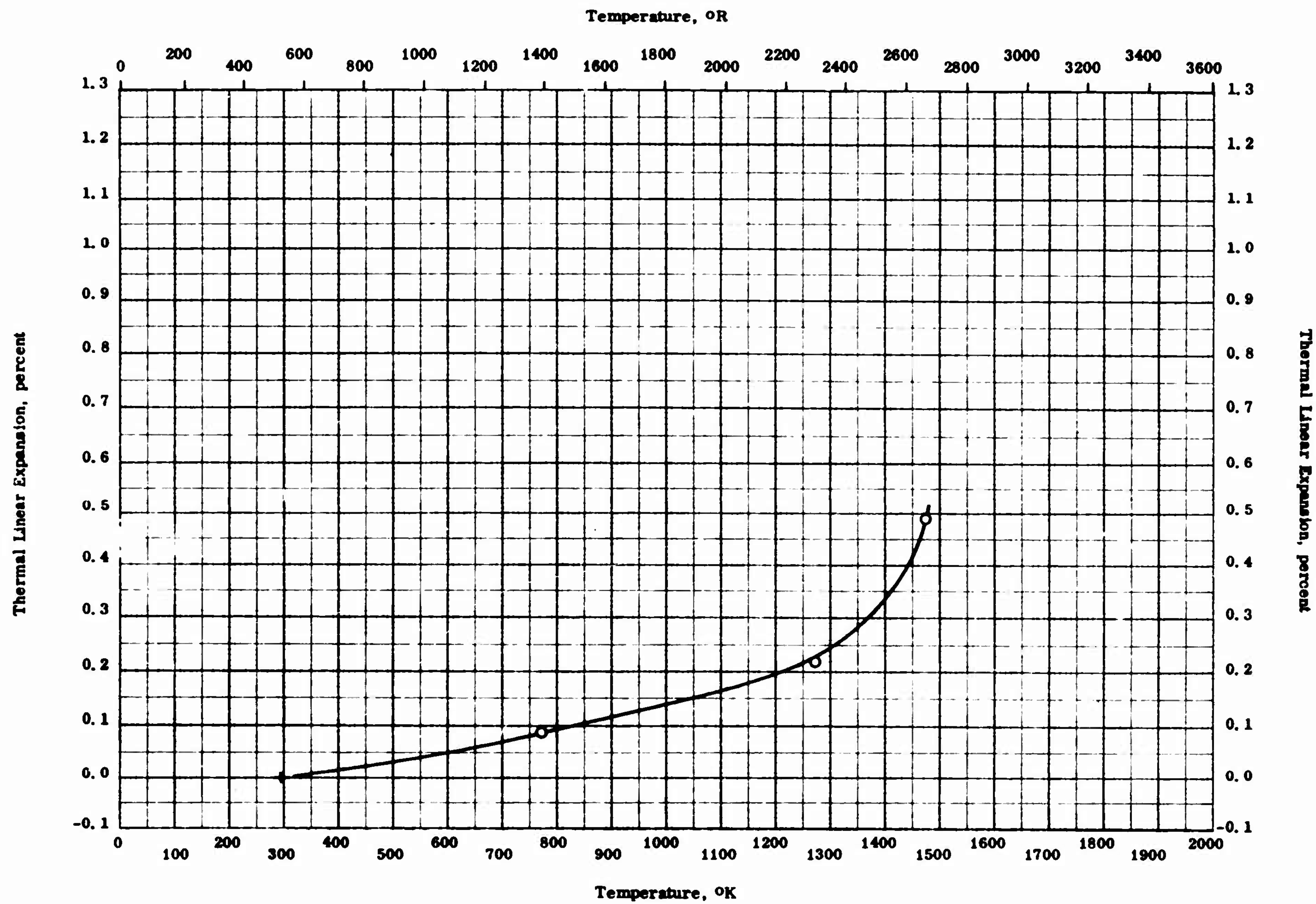


SPECIFIC HEAT -- CALCIUM ALUMINATE

SPECIFIC HEAT -- CALCIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-33	53-300		$CaO \cdot 2Al_2O_3$; 78.49 Al_2O_3 and 21.58 CaO (cf. theor. 78.43 and 21.57).	
□	55-33	53-300		$CaO \cdot Al_2O_3$; 64.44 Al_2O_3 and 35.49 CaO (cf. theor. 64.51 and 35.49).	
△	55-33	53-300		$12CaO \cdot 7Al_2O_3$; 51.2 Al_2O_3 and 48.32 CaO (cf. theor. 51.47 and 48.53); 0.25 MgO + alkali oxides; 0.10 Fe_2O_3.	
◇	55-33	53-300		$3CaO \cdot Al_2O_3$; 62.25 CaO and 37.84 Al_2O_3 (cf. theor. 62.26 and 37.74).	

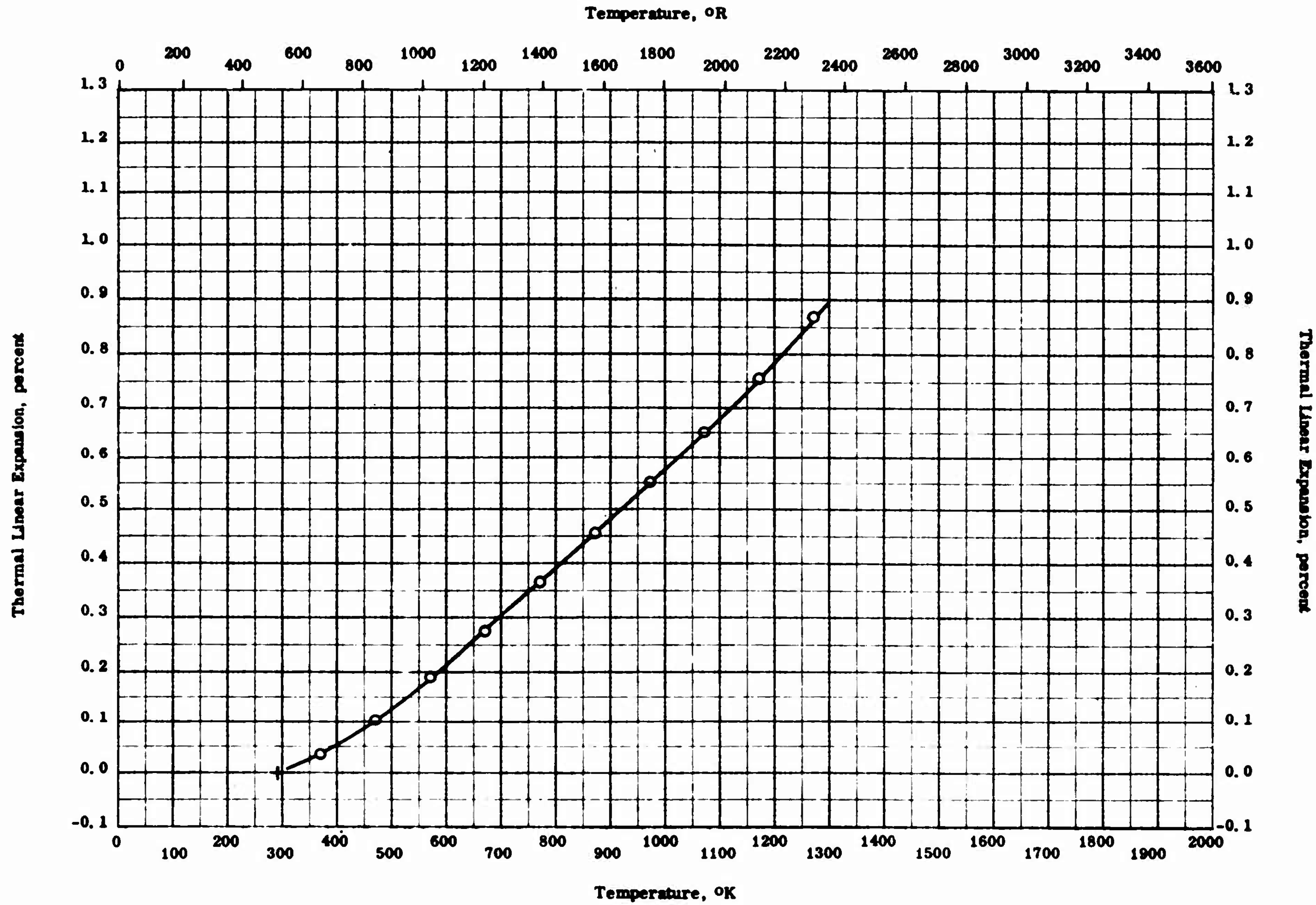


THERMAL LINEAR EXPANSION -- CALCIUM ALUMINATE

THERMAL LINEAR EXPANSION -- CALCIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-35	298-1473		$3\,CaO \cdot 5\,Al_2O_3$.	

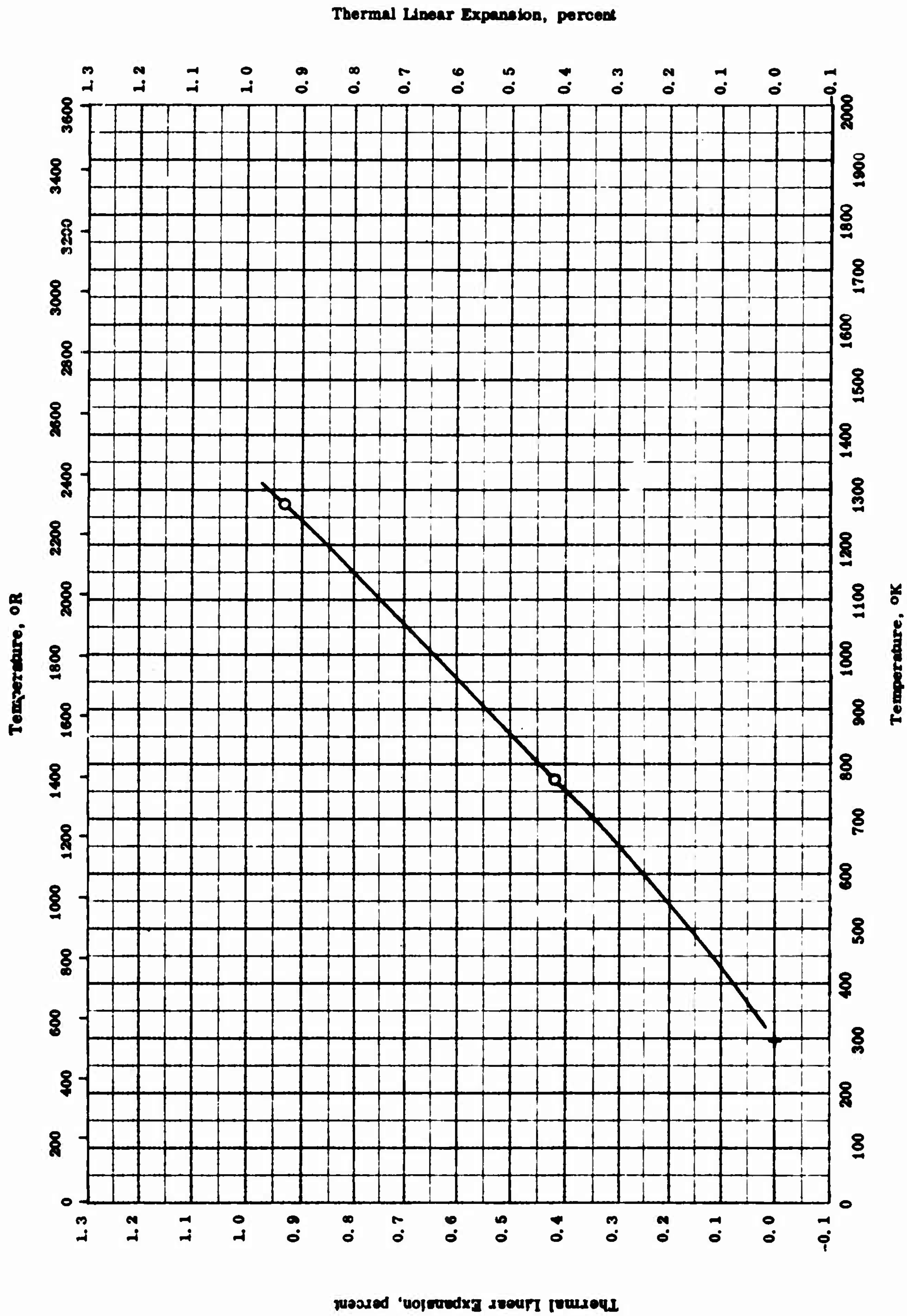


THERMAL LINEAR EXPANSION -- CALCIUM HEXALUMINATE

THERMAL LINEAR EXPANSION -- CALCIUM HEXALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	64-17	298-1273		$CaO \cdot 6Al_2O_3$; dimensions 1/4 in. diameter by 4 in. long.	Prepared from calcined alumina and $CaCO_3$ wet milled in 3000 g batches for 24 hrs with 4500 g of 1 in. diameter alumina balls in 5-1/2 qt. alumina mill, dried to 200 C, formed into pressing granules using organic binder, dry pressed, fired to 1650 C at average heating rate of 100 C hr^{-1}, soaked for 3 hrs, and cooled at an average rate of about 100 C hr^{-1}.

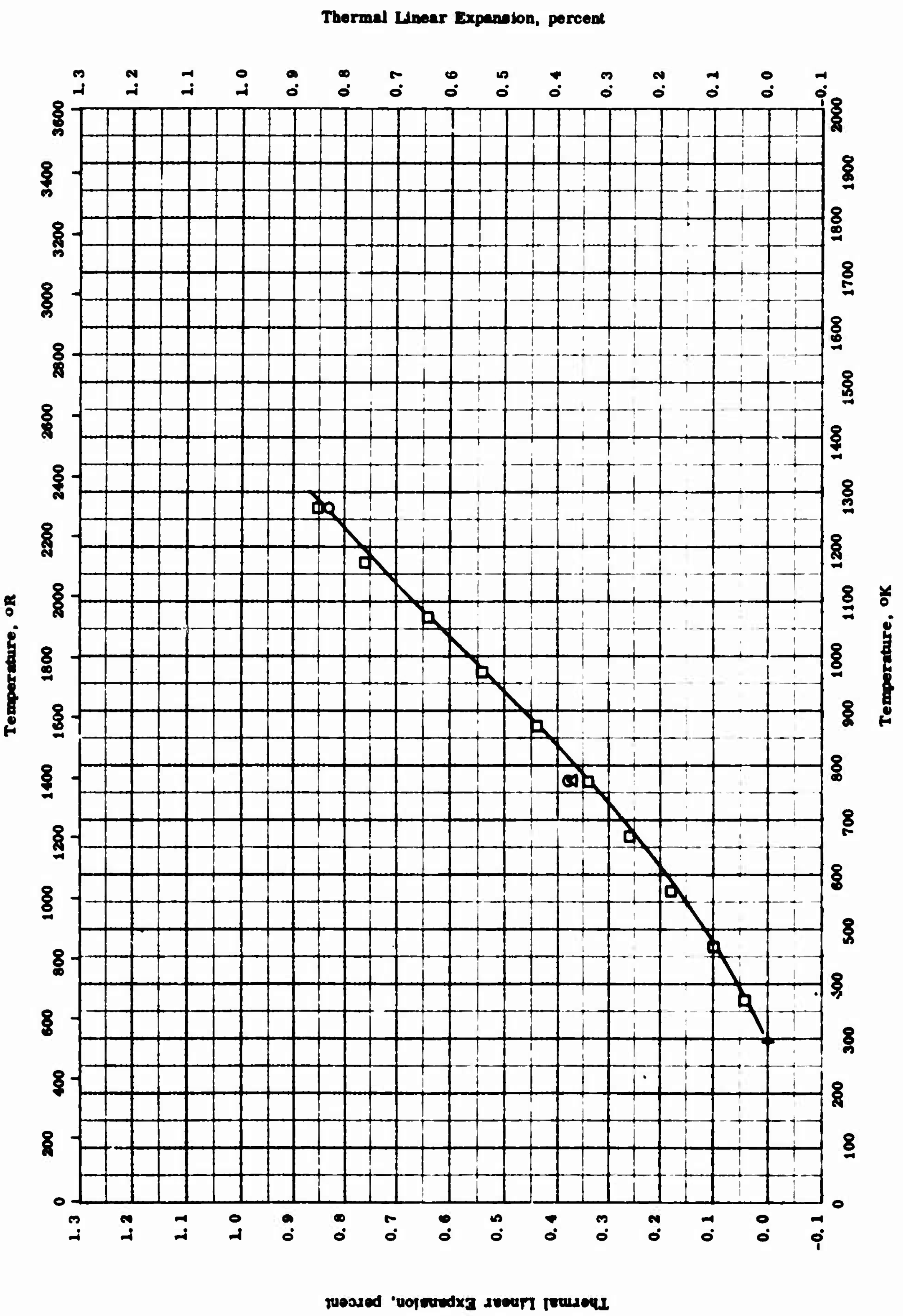


THERMAL LINEAR EXPANSION -- CERIUM ALUMINATE

THERMAL LINEAR EXPANSION -- CERIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-35	298-1273		$2CeO_2 \cdot 3Al_2O_3$.	

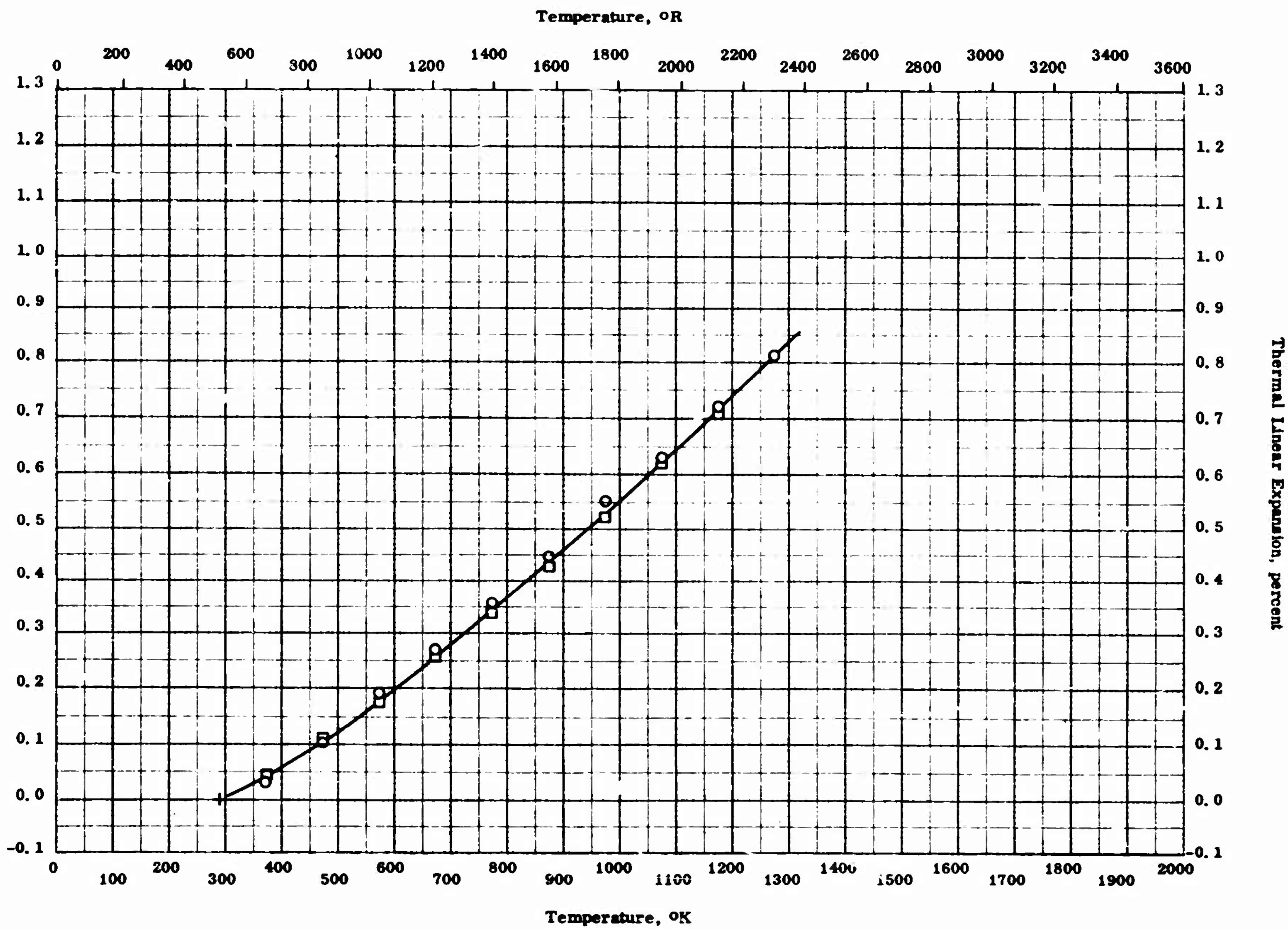


THERMAL LINEAR EXPANSION -- COBALT ALUMINATES

THERMAL LINEAR EXPANSION -- COBALT ALUMINATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-35	298-1273		$CoO \cdot Al_2O_3$.	
□	48-6	293-1273		$CoO \cdot Al_2O_3$.	Fired 1 hr at 1700 C.
△	60-35	298-1273		$Co_2O_3 \cdot Al_2O_3$.	

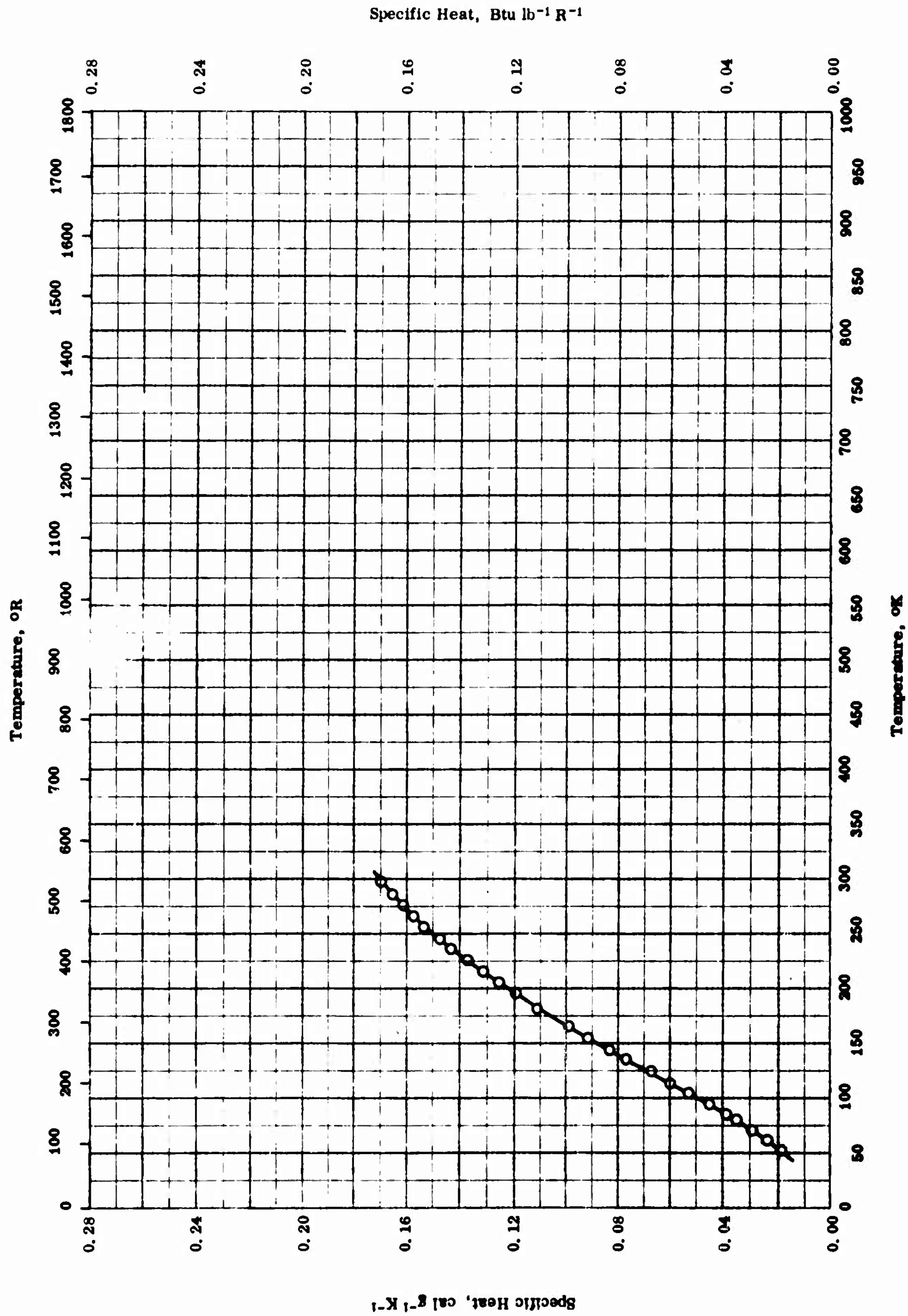


THERMAL LINEAR EXPANSION -- DYSPROSIUM ALUMINATE

THERMAL LINEAR EXPANSION -- DYSPROSIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-38	303-1273		$Dy_2O_3 \cdot 2Al_2O_3$; 64.6 Dy_2O_3 and 35.4 Al_2O_3; body centered cubic compound; melting point 1820 ± 10 C; density 6.05 g cm^{-3}.	Wet ball milled with flint pebbles for 2 hrs, dry pressed at 20,000 psi with 2% soluble wax emulsion into pellets 1/2 in. diameter by 1 in. long, and fired in H_2 atm. for 1 hr.
□	60-38	303-1273		Same as above.	Same as above.

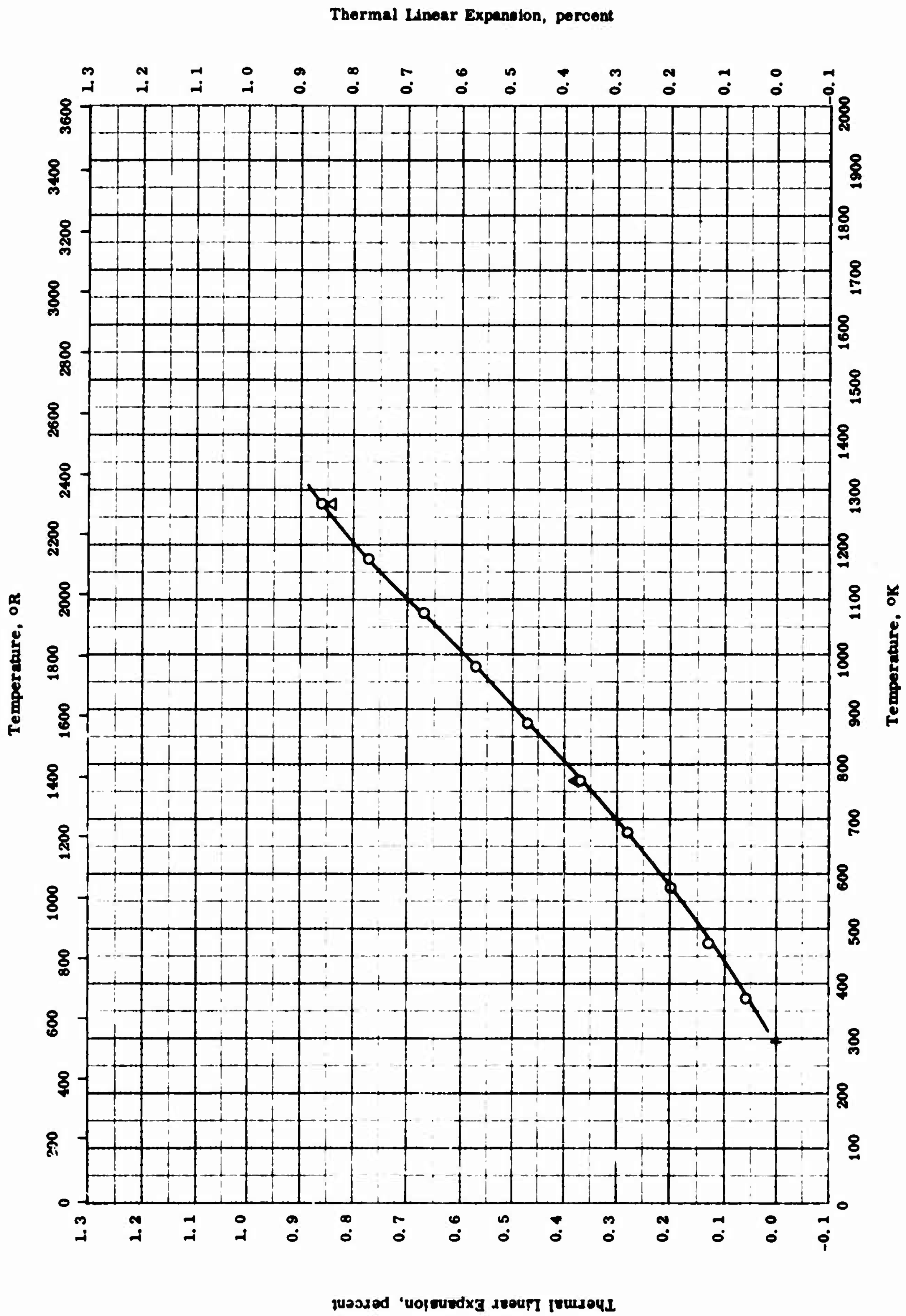


SPECIFIC HEAT -- IRON ALUMINATE

SPECIFIC HEAT -- IRON ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	56-25	53-298		$FeAl_2O_4$ spinel; 58.62 Al_2O_3, 41.24 FeO, 0.12 SiO_2.	Prepared from reagent grade powdered iron, ferric oxide and hydrated alumina; 7 heats totalling 40 hrs at 1250 - 1350 C with grinding, mixing etc. in between.

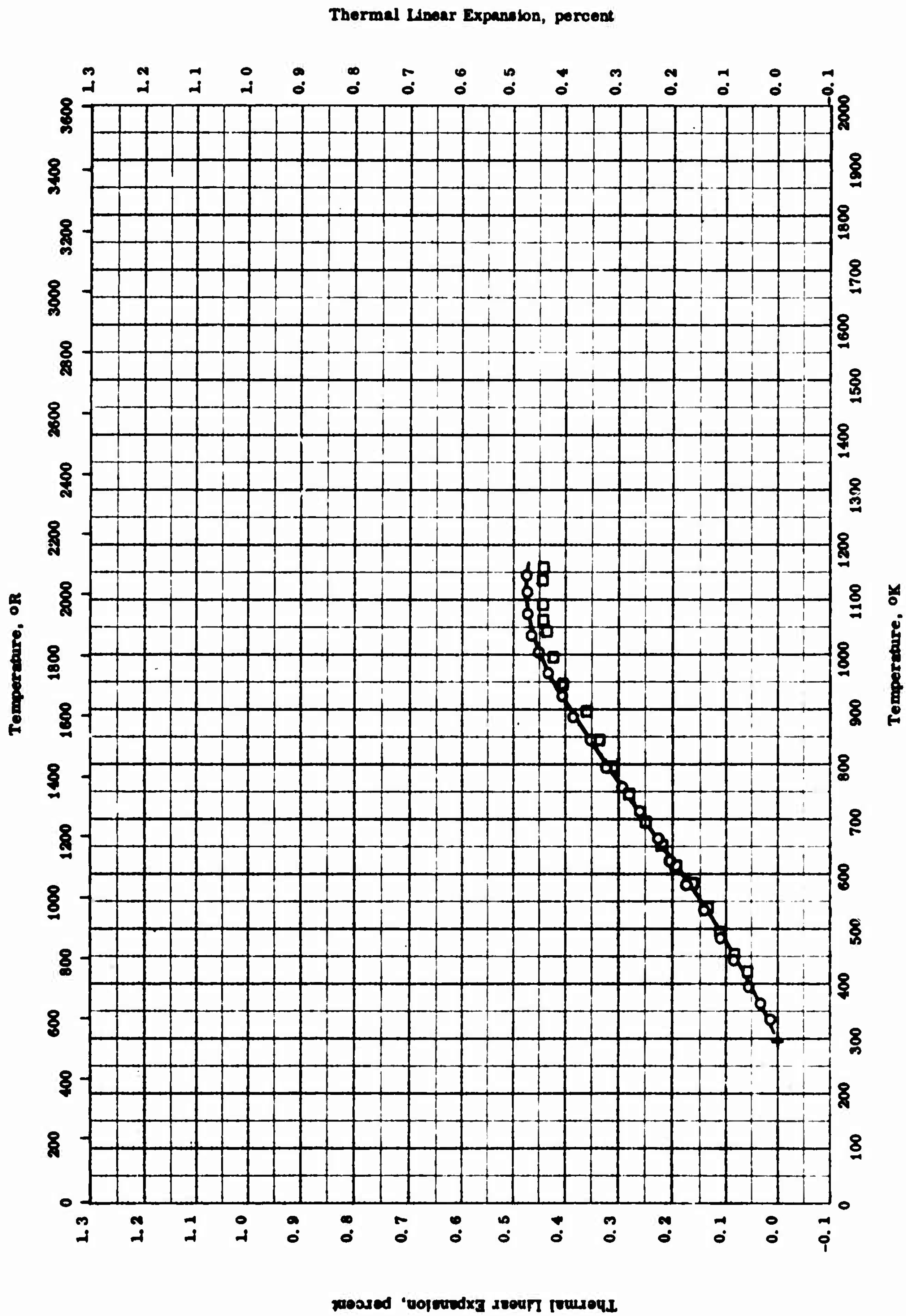


THERMAL LINEAR EXPANSION -- IRON ALUMINATES

THERMAL LINEAR EXPANSION -- IRON ALUMINATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
△	60-35	298-1273		$FeO \cdot Al_2O_3$.	
○	46-5	293-1273		Solid solution $Fe_2O_3 \cdot 2\ Al_2O_3$; density 272 lb ft^{-3}.	

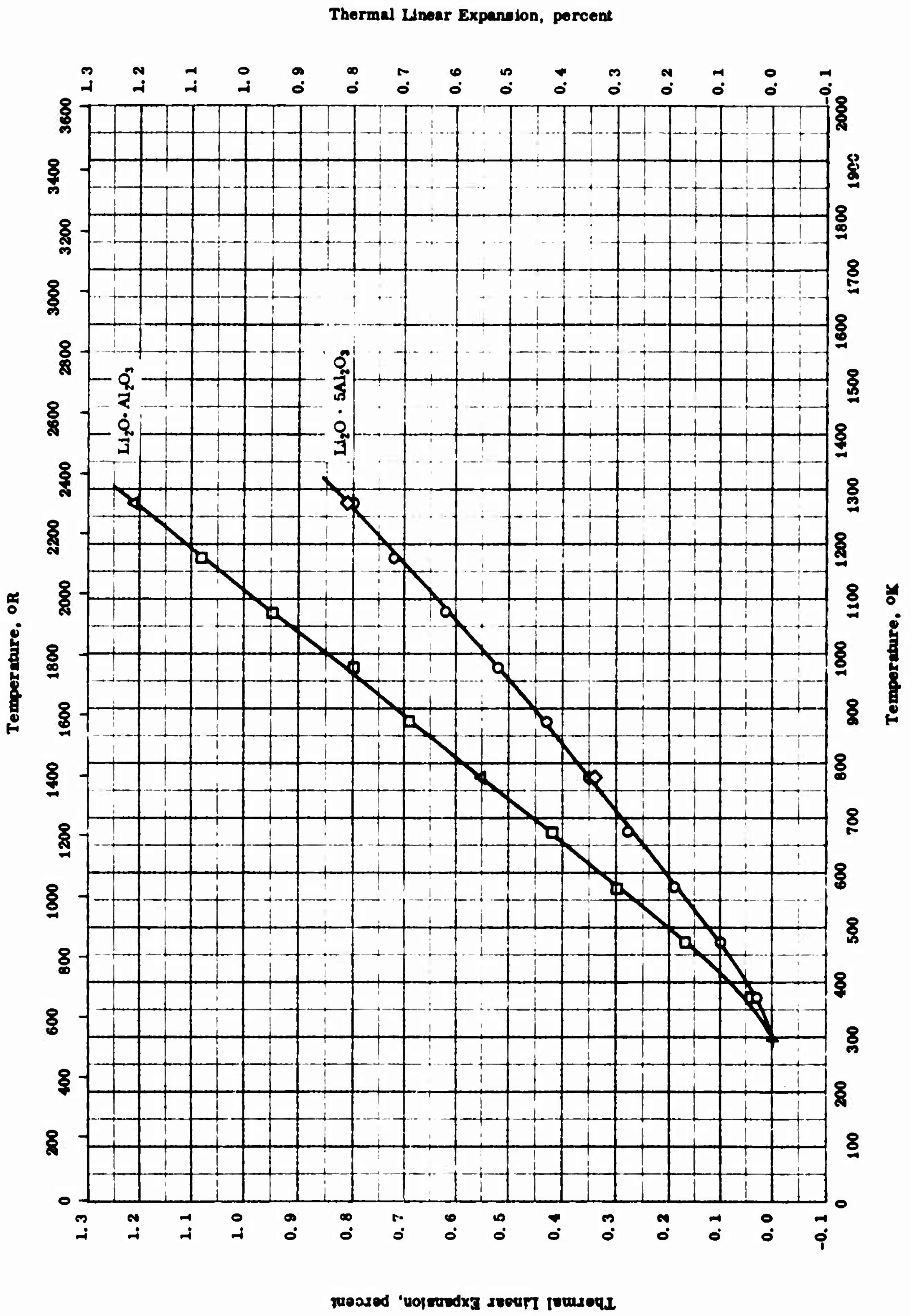


THERMAL LINEAR EXPANSION -- LEAD ALUMINATE

THERMAL LINEAR EXPANSION -- LEAD ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-38	298-1144		$PbO \cdot Al_2O_3$; calculated composition 68.64 PbO and 31.36 Al_2O_3; prepared from c.p. chemicals; original length 92.5 mm.	Hand mixed with acetone for 15 to 20 min, air dried, heated slowly to 300 C for 4 hrs, remixed, recalcined at 900 C for 12 hrs, ground, mixed with carbowax solution, nodulized through a 20-mesh sieve, pressed into 10 by 1 by 1 cm bars at 1000 psi, and fired slowly to 900 C for 6 hrs; measured with heating rate of 120 C hr^{-1}.
□	63-38	298-1157		Same as above.	Second run for above sample.



THERMAL LINEAR EXPANSION -- LITHIUM ALUMINATES

THERMAL LINEAR EXPANSION -- LITHIUM ALUMINATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
△	60-35	298-1273		$Li_2O \cdot Al_2O_3$.	
◇	60-35	298-1273		$Li_2O \cdot 5Al_2O_3$.	
○	51-24	293-1273		$Li_2O \cdot 5Al_2O_3$; 94.5 Al_2O_3 and 5.5 Li_2O ; prepared from c.p. Li_2CO_3 and c.p. Al_2O_3; potter's flint.	Pressed 100 mesh calcined material at 1000 psi using Carbowax Methocel binder.
□	51-24	293-1173		$Li_2O \cdot Al_2O_3$; 77.3 Al_2O_3 and 22.7 Li_2O; prepared from c.p. Li_2CO_3 and c.p. Al_2O_3; potter's flint.	Same as above.

PROPERTIES OF MAGNESIUM ALUMINATE

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density.	3.60	225
Melting Point	2408*	4334*

*Handbook of Chemistry and Physics (Ref. 64-16)

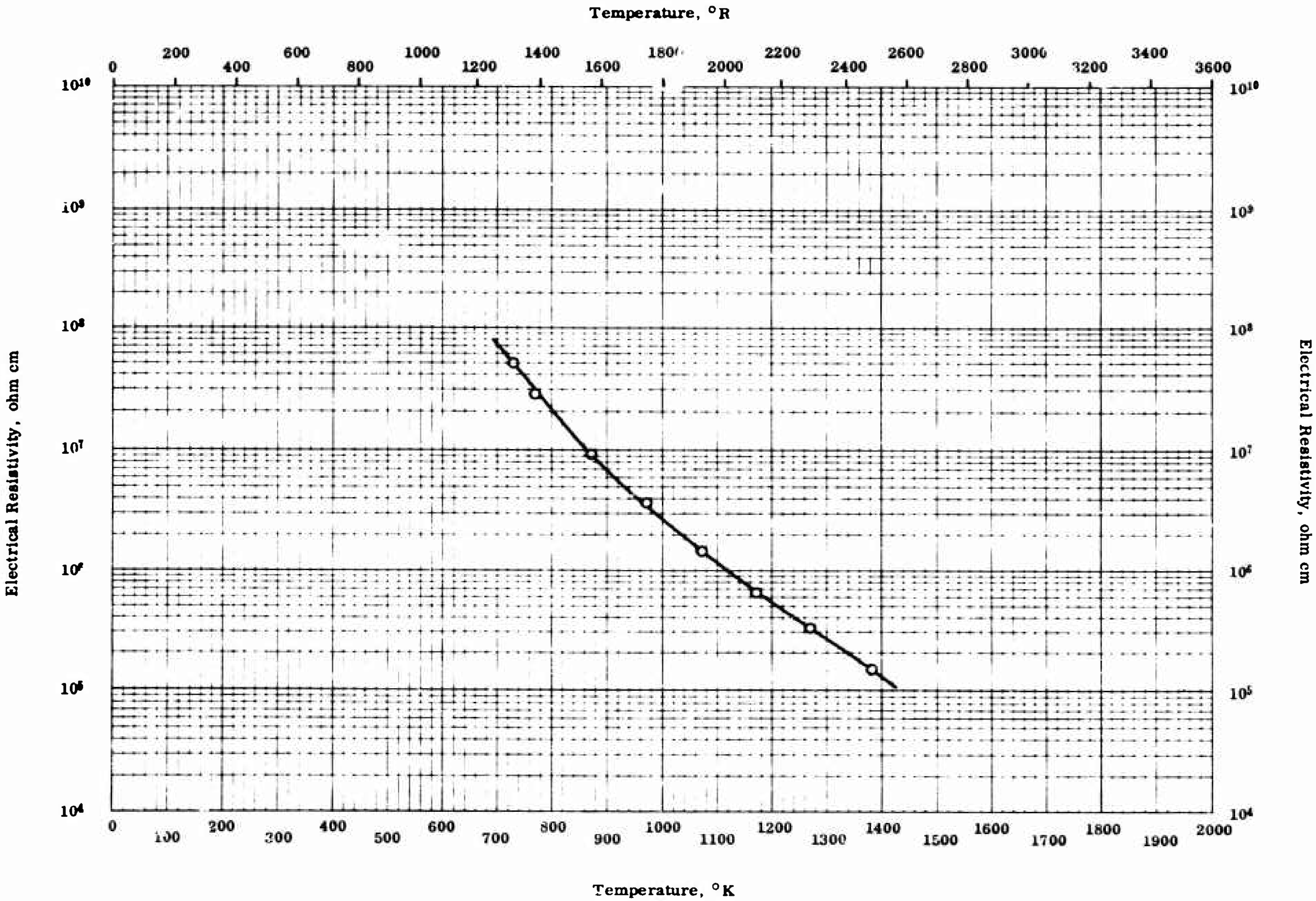
REPORTED VALUES

Density		$g\ cm^{-3}$	$lb\ ft^{-3}$
	O	3.60 ± 0.01	225 ± 0.6

PROPERTIES OF MAGNESIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-13	298		Spinel.	Density by weight in air and in Kerosene.

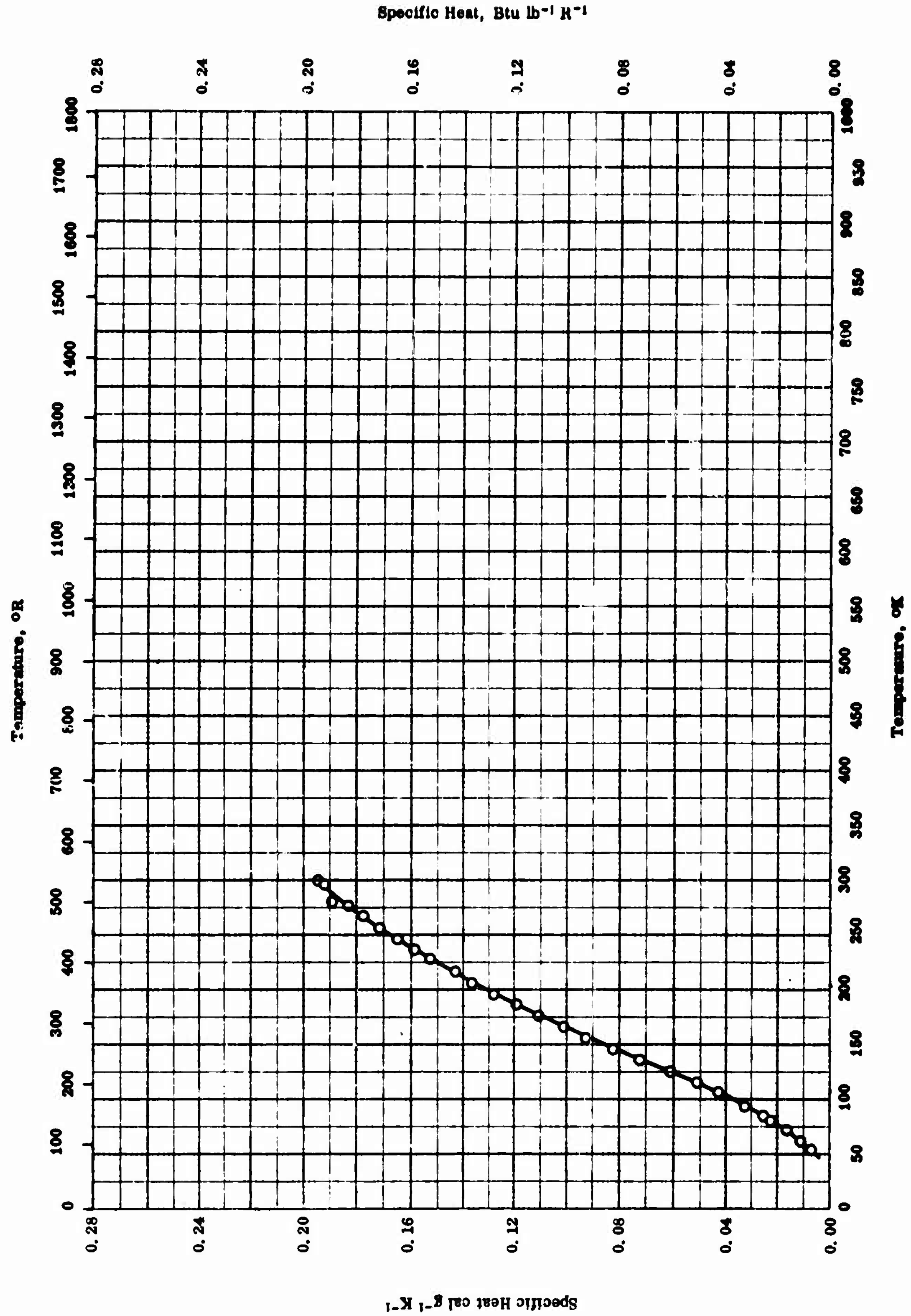


ELECTRICAL RESISTIVITY -- MAGNESIUM ALUMINATE

ELECTRICAL RESISTIVITY -- MAGNESIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	40-3	738-1383		$MgO \cdot Al_2O_3$; spinel.	1 cm cube samples with platinized end faces; auth. est. accuracy only order of magnitude.

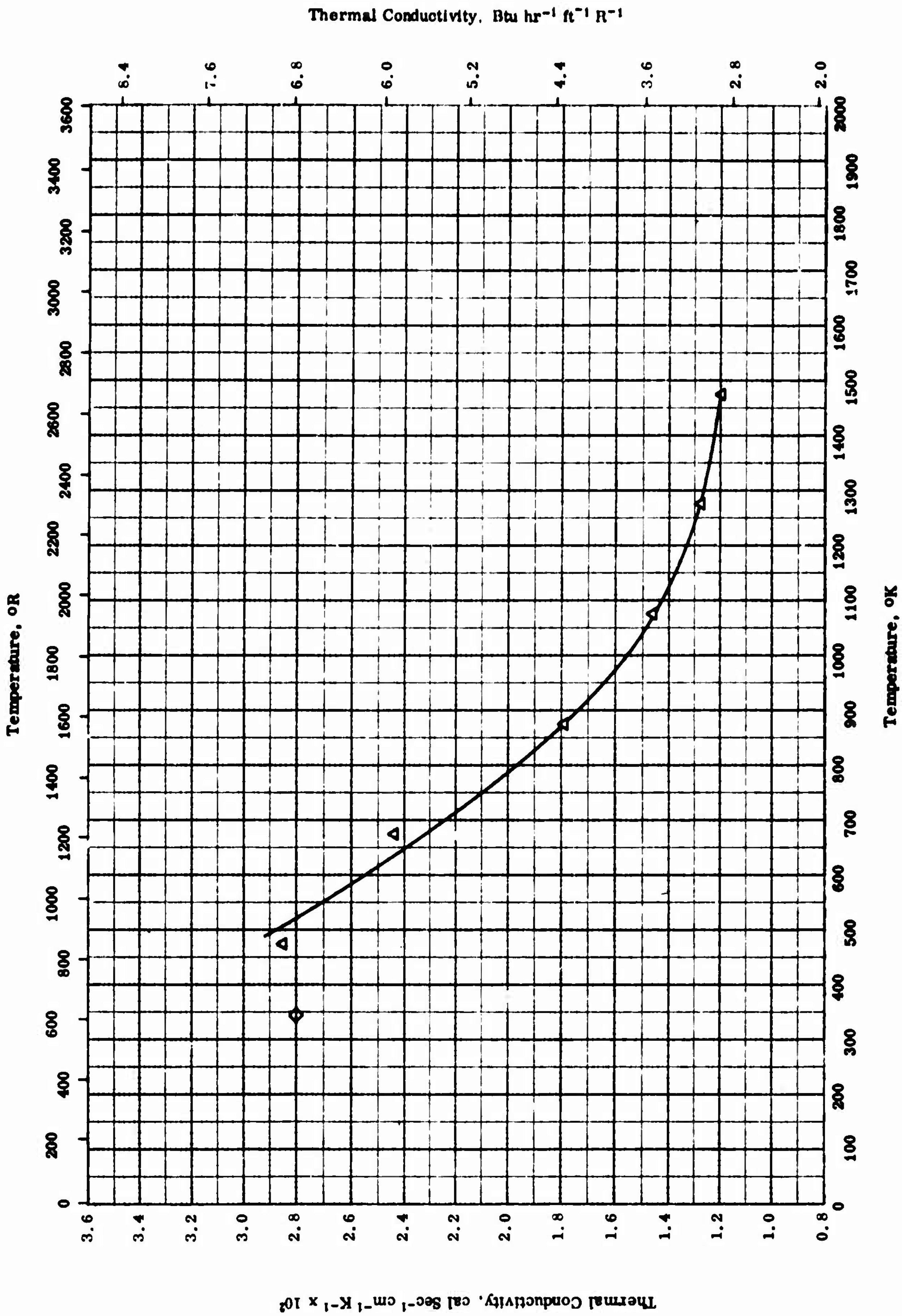


SPECIFIC HEAT -- MAGNESIUM ALUMINATE

SPECIFIC HEAT -- MAGNESIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	55-33	53-298		Spinel, $MgO \cdot Al_2O_3$; 71.62 Al_2O_3 and 28.33 MgO.	

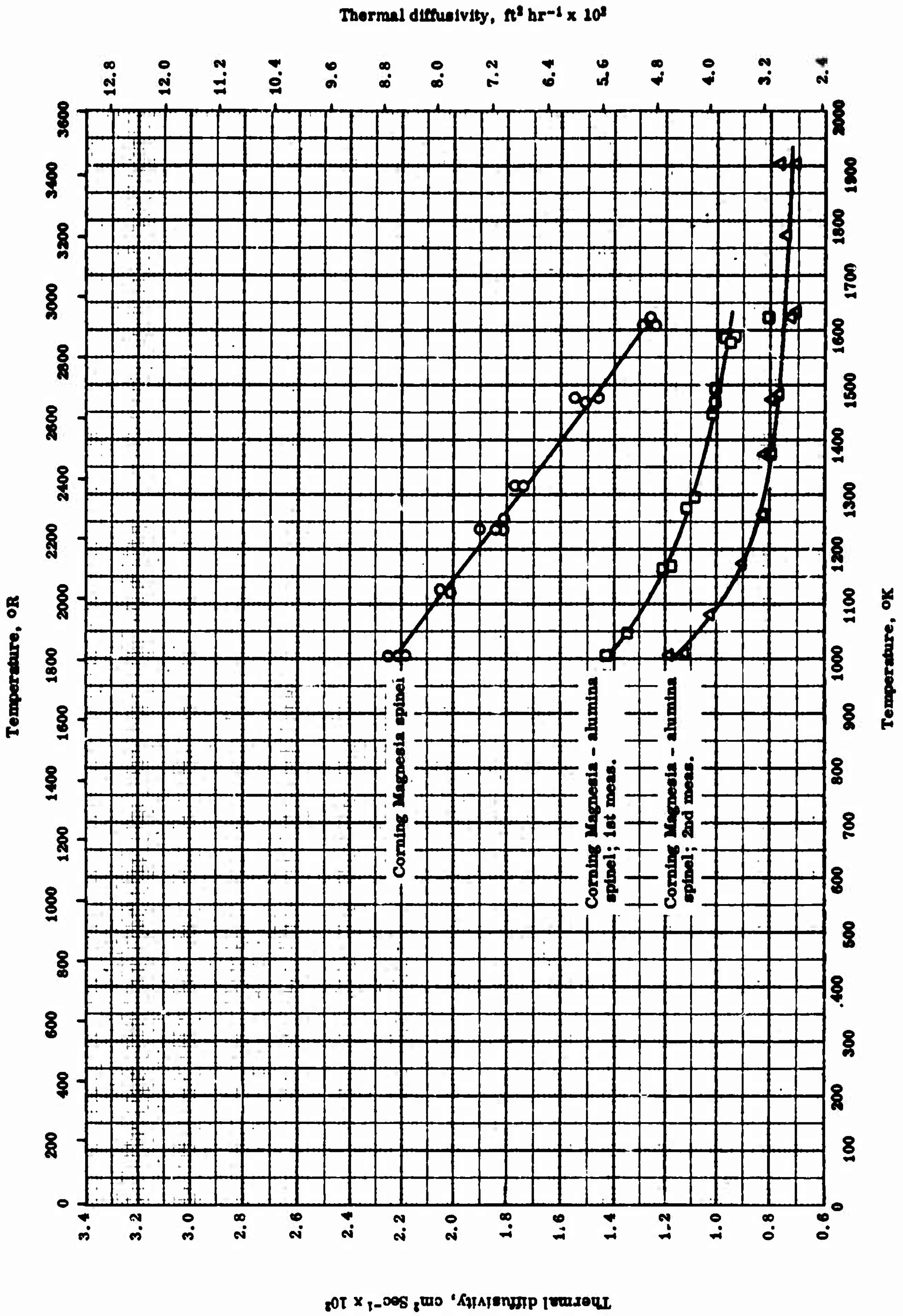


THERMAL CONDUCTIVITY -- MAGNESIUM ALUMINATE

THERMAL CONDUCTIVITY — MAGNESIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
△	54-1	473-1473		$MgO \cdot Al_2O_3$; 71.9 Al_2O_3 and 29.0 MgO ; bulk density 204 lb ft^{-3} (cf theoretical 221) and porosity 7.65%.	
◇	53-2	343		Spinel; single crystal; density 225 lb ft^{-3}.	

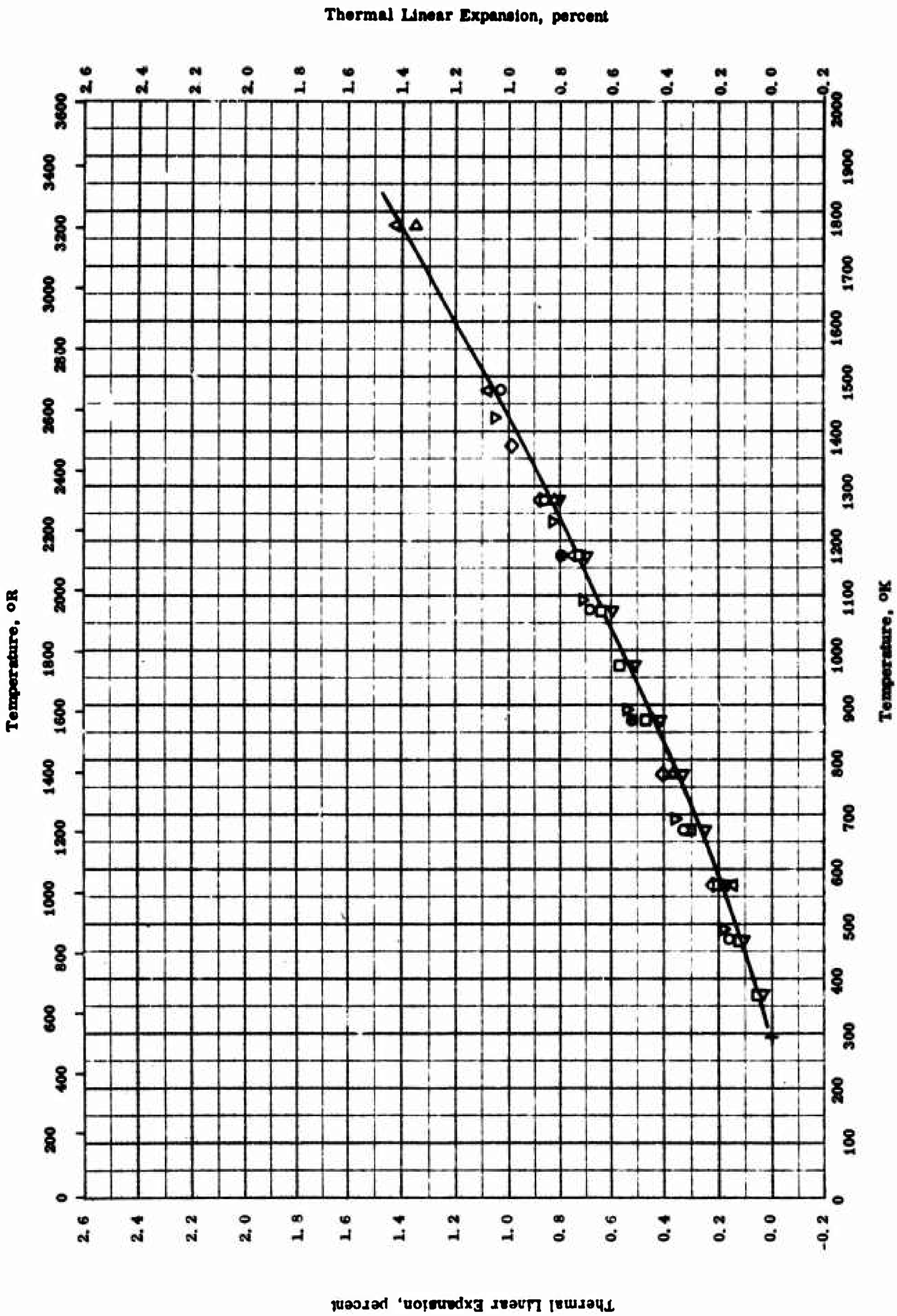


THERMAL DIFFUSIVITY — MAGNESIUM ALUMINATE
(Spinel)

THERMAL DIFFUSIVITY — MAGNESIUM ALUMINATE
(Spinel)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-2	1001-1620	±5-10	HC-24 Corning magnesia spinel; density 3.45 g cm^{-3}.	
□	63-2	1003-1623	±5-10	Corning magnesia-alumina spinel; density 3.32 g cm^{-3}.	
△	63-2	1003-1903	±5-10	Same as above.	Second run of the above specimen.

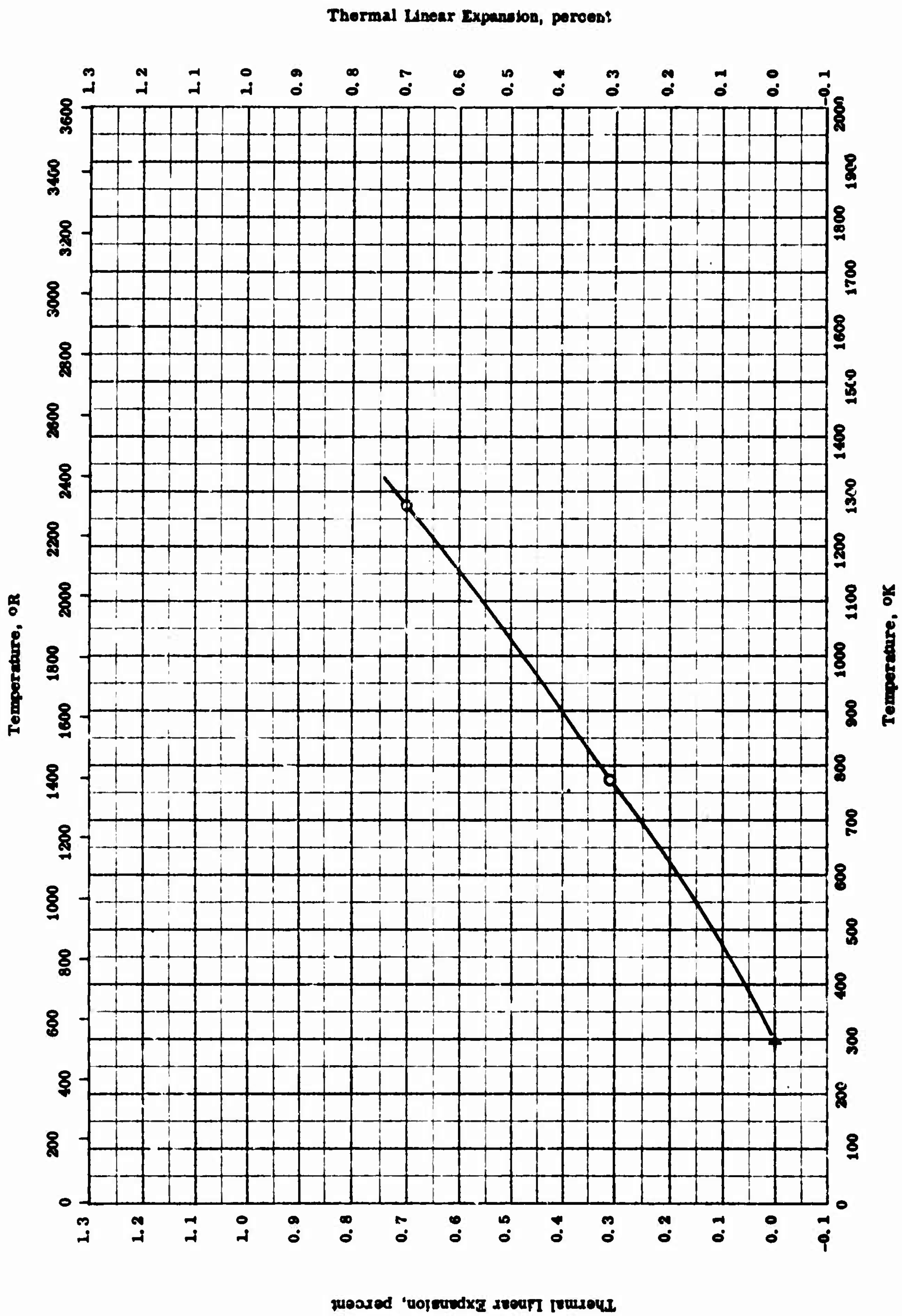


THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINATE

THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
●	61-43	298-1273		$MgO \cdot Al_2O_3$; polycrystalline bar; density 3.28 g cm^{-3}; porosity 8.4%.	
▷	60-35	298-1773		$MgO \cdot Al_2O_3$.	
◁	64-17	298-1273		$MgO \cdot Al_2O_3$, spinel; dimensions 1/4 in. in diameter by 4 in. long.	Calcined alumina and $MgCO_3$ wet mixed in 3000 g batches for 24 hrs with 4500 g of 1 in. diameter alumina balls in 5-1/2 qt. alumina mills, dried to 200 C, formed into pressing granules using organic binder, dry pressed, fired to 1550 C at average heating rate of approx. 100 C hr^{-1}, soaked for 3 hrs, and cooled at average rate of approx. 100 C hr^{-1}.
○	57-34	293-1473		Prepared from reagent grade materials.	
□	46-4	293-1273		Prepared from 99^+ Al_2O_3 and 97 MgO (periclase).	Sample reacted with fused silica interferometer plates.
△	56-28	573-1773		$MgO \cdot Al_2O_3$; coarse fused grain.	
◇	46-5	373-1473		$MgO \cdot Al_2O_3$, spinel; density 222 lb ft^{-3}.	Oxides mixed with 5% boric acid, molded, fired 2 hrs at 1530 C; crushed, molded and refired to 1530 C; repeated.
▽	56-30	491-1428		$MgO \cdot Al_2O_3$.	

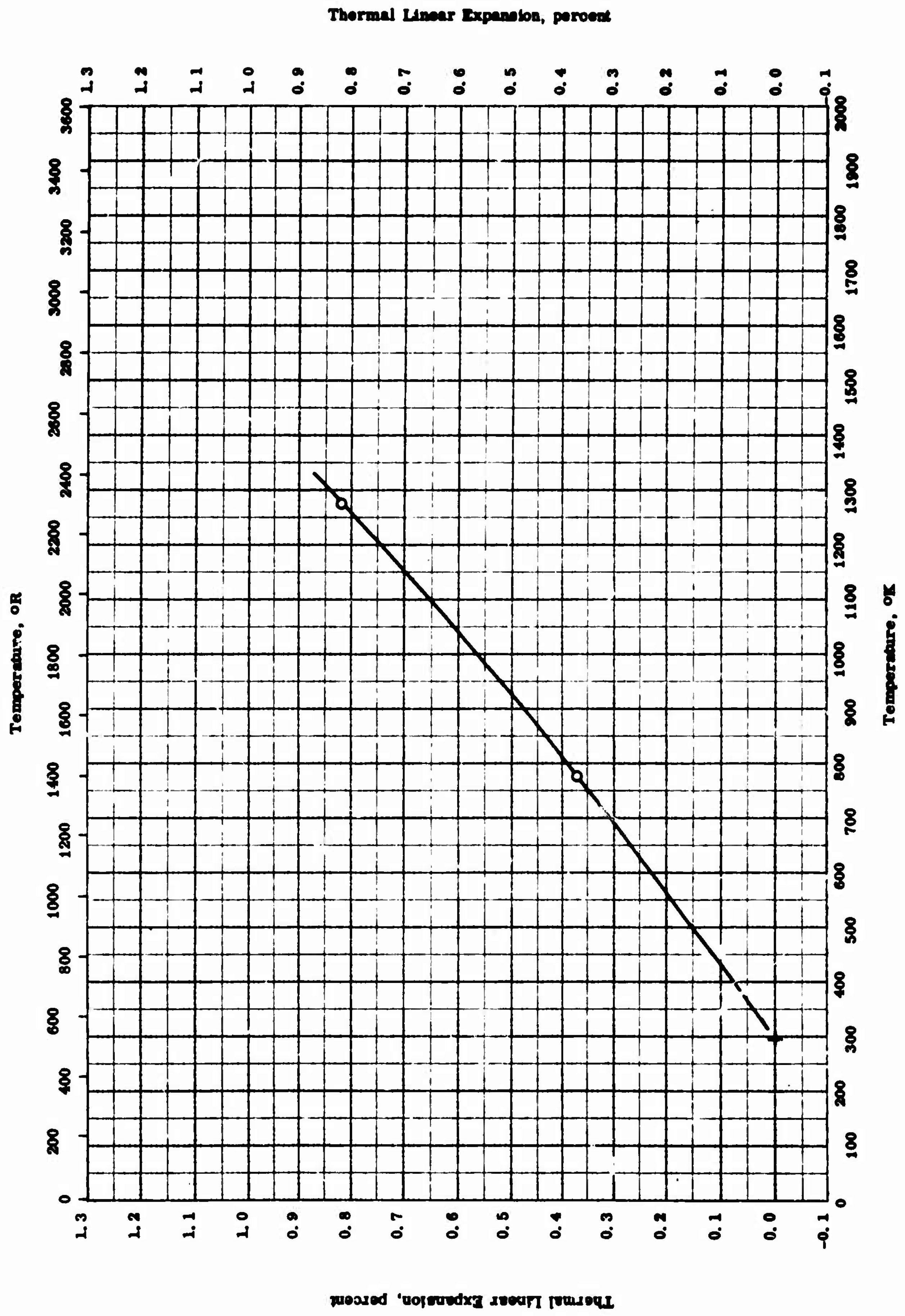


THERMAL LINEAR EXPANSION -- MANGANESE ALUMINATE

THERMAL LINEAR EXPANSION -- MANGANESE ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-35	298-1273		$MnO \cdot Al_2O_3$.	

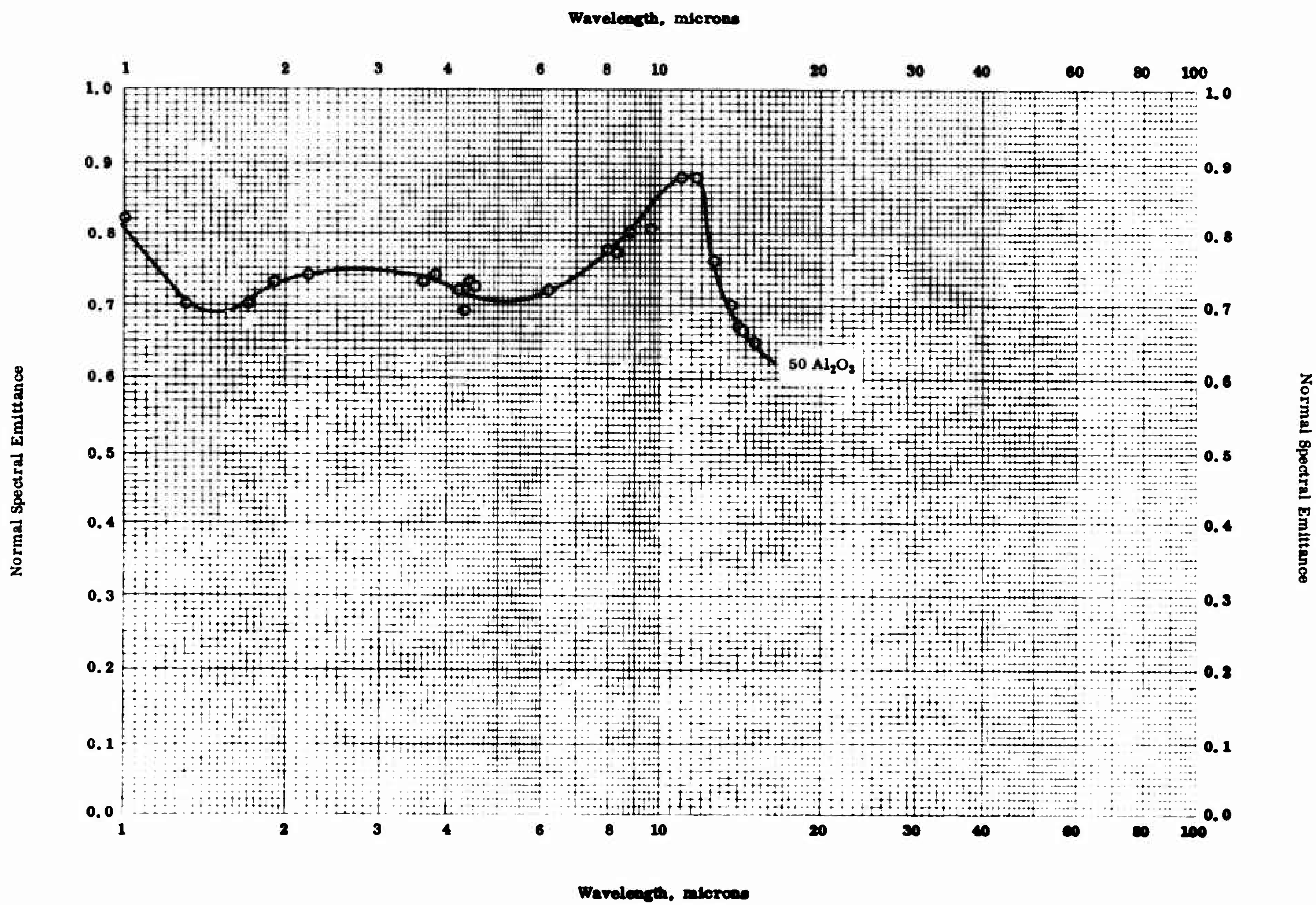


THERMAL LINEAR EXPANSION -- NICKEL ALUMINATE

THERMAL LINEAR EXPANSION -- NICKEL ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-35	298-1273		$NiO \cdot Al_2O_3$.	



NORMAL SPECTRAL EMITTANCE -- NICKEL ALUMINATE

NORMAL SPECTRAL EMITTANCE -- NICKEL ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error%	Sample Specifications	Remarks
○	62-23	1273	1-15		50 NiO and 50 Al_2O_3; crystal structure nickel aluminate, $NiAl_2O_4$; 0.041 in. thickness plate.	Sintered at 2023 K for 2 hr; measured in air; data taken from a curve.

PROPERTIES OF STRONTIUM ALUMINATE

REPORTED VALUES

Density		$g\ cm^{-3}$	$lb\ ft^{-3}$
△	$SrO \cdot Al_2O_3$	3.3	206
◇	$3\ SrO \cdot Al_2O_3$	3.5	219

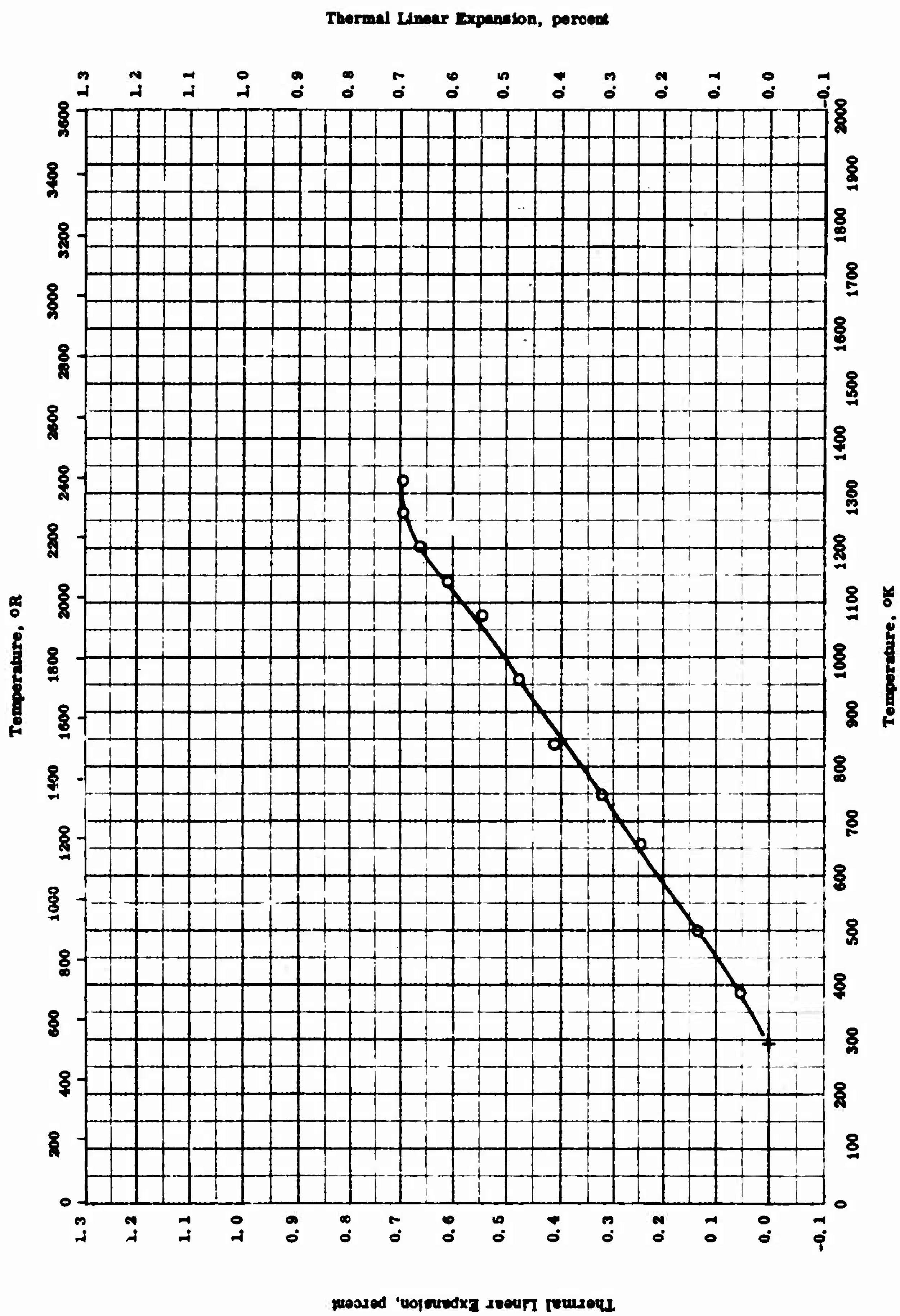
Melting Point		K	R
○	$SrO \cdot 2\ Al_2O_3$	2043 ± 15*	3678 ± 27*
□	$SrO \cdot 2\ Al_2O_3$	2053 ±20	3696 ± 36

*Most probable value for this compound.

PROPERTIES OF STRONTIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-25	2028-2064		$SrO \cdot 2\ Al_2O_3$; single crystal.	M.P. by thermal arrest during slow cooling to obtain single crystal.
□	56-22	2033-2072		$SrO \cdot 2\ Al_2O_3$.	M.P. by visual observation of first drop from V-shape ribbon.
△	59-9	298		$SrO \cdot Al_2O_3$.	
◇	59-9	298		$3\ SrO \cdot Al_2O_3$.	

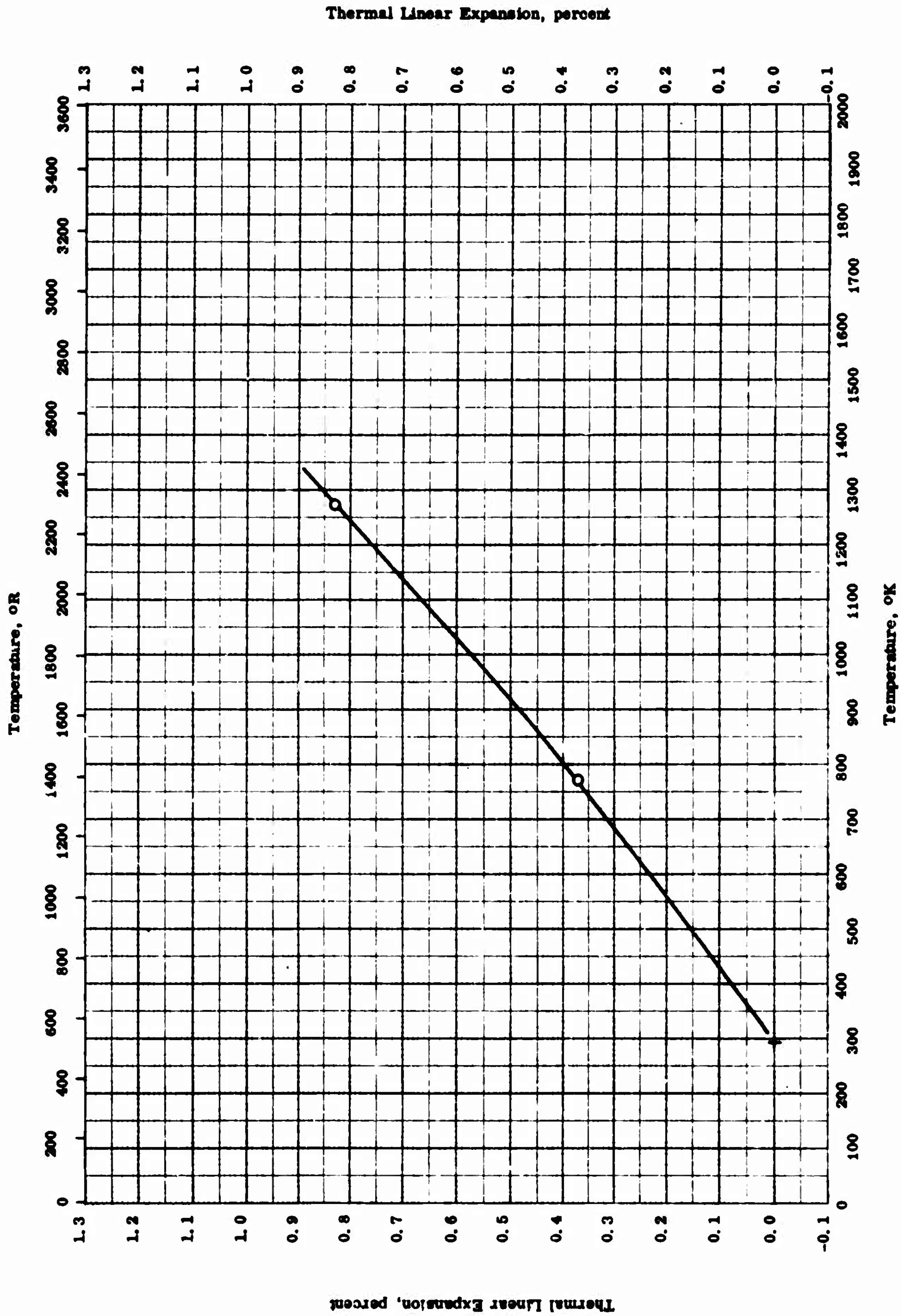


THERMAL LINEAR EXPANSION -- STRONTIUM ALUMINATE

THERMAL LINEAR EXPANSION -- STRONTIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-36	297-1323	2	$SrO \cdot 2Al_2O_3$; x-ray examination revealed the presence of some free SrO and Al_2O_3; dimensions 4-3/8 in. long by 7/16 in. square.	$SrCO_3$ and Al_2O_3 milled together in 1: 2 mole ratio, fired to 1340 C, reground, mixed with 15 binder solution (40 g carbowax 20 M, 20 cc of 2 Methocel solution and 40 cc H_2O), dried, pressed into a bar at 9600 psi, and fired at 1400 C for 3 hrs; measured with heating rate of 3 C min^{-1}.

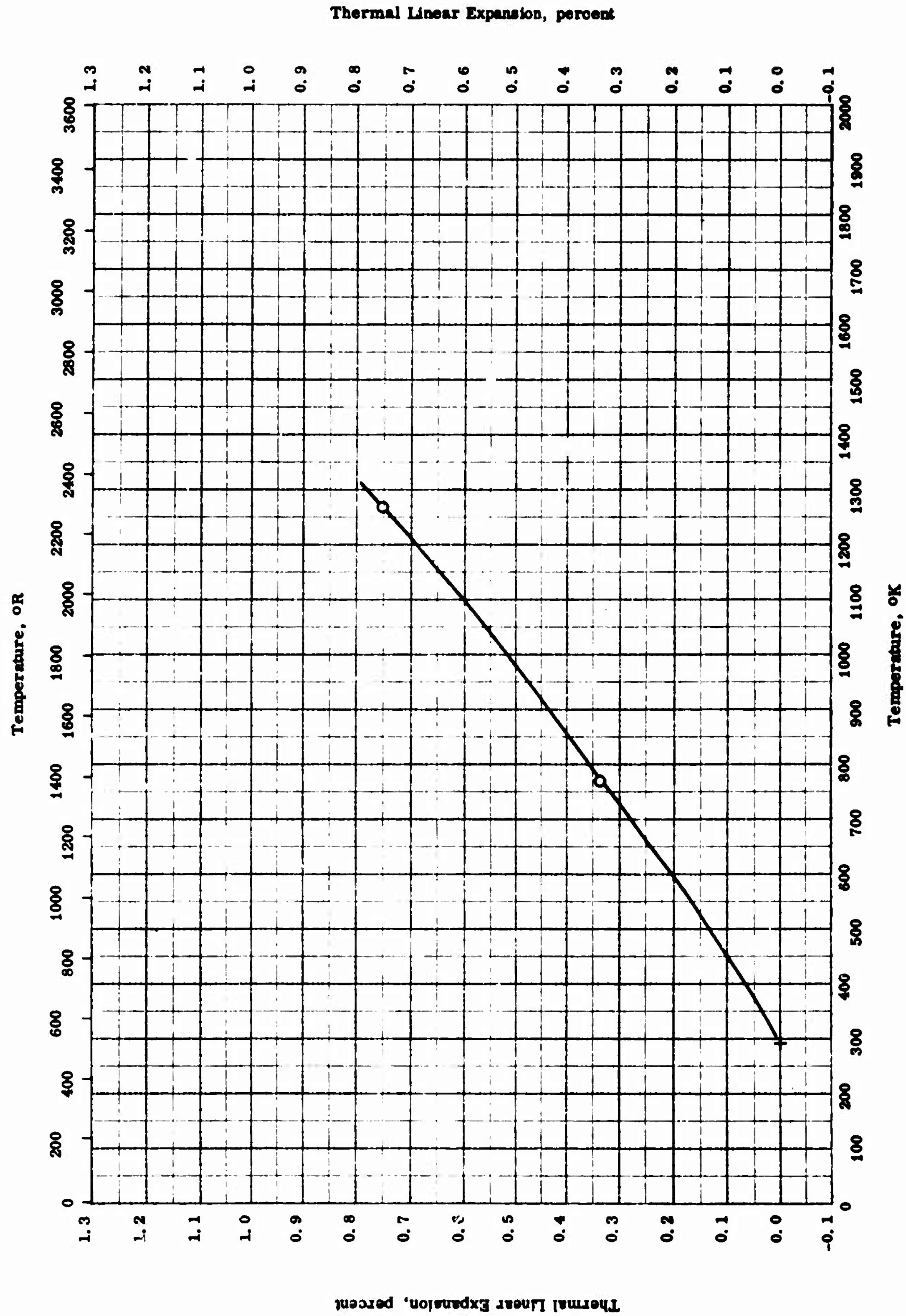


THERMAL LINEAR EXPANSION -- THORIUM ALUMINATE

THERMAL LINEAR EXPANSION -- THORIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-35	298-1273		$2ThO_2 \cdot 3Al_2O_3$.	

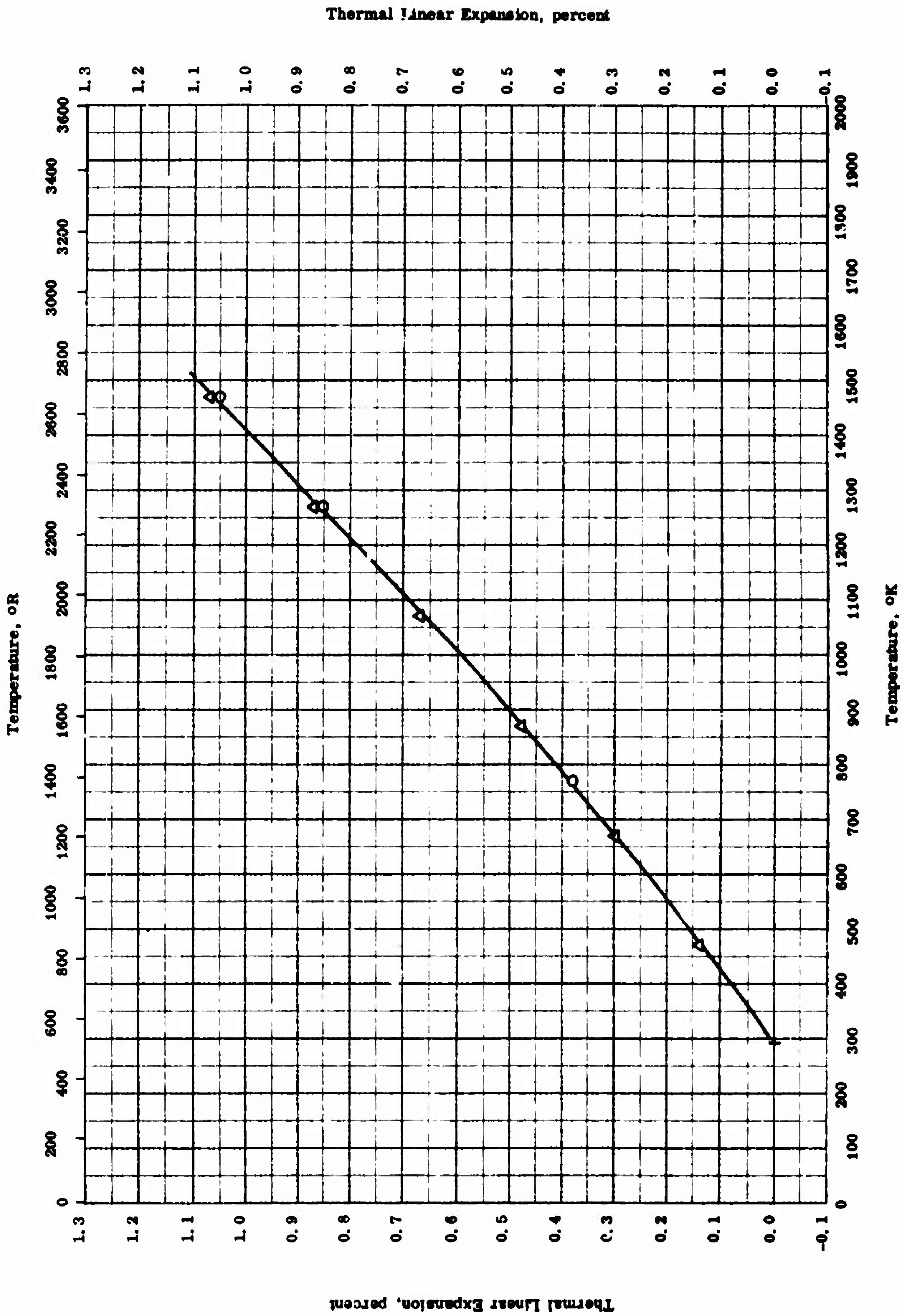


THERMAL LINEAR EXPANSION -- TIN (IC) ALUMINATE

THERMAL LINEAR EXPANSION -- TIN (IC) ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-35	298-1273		$2SnO_2 \cdot 3Al_2O_3$.	

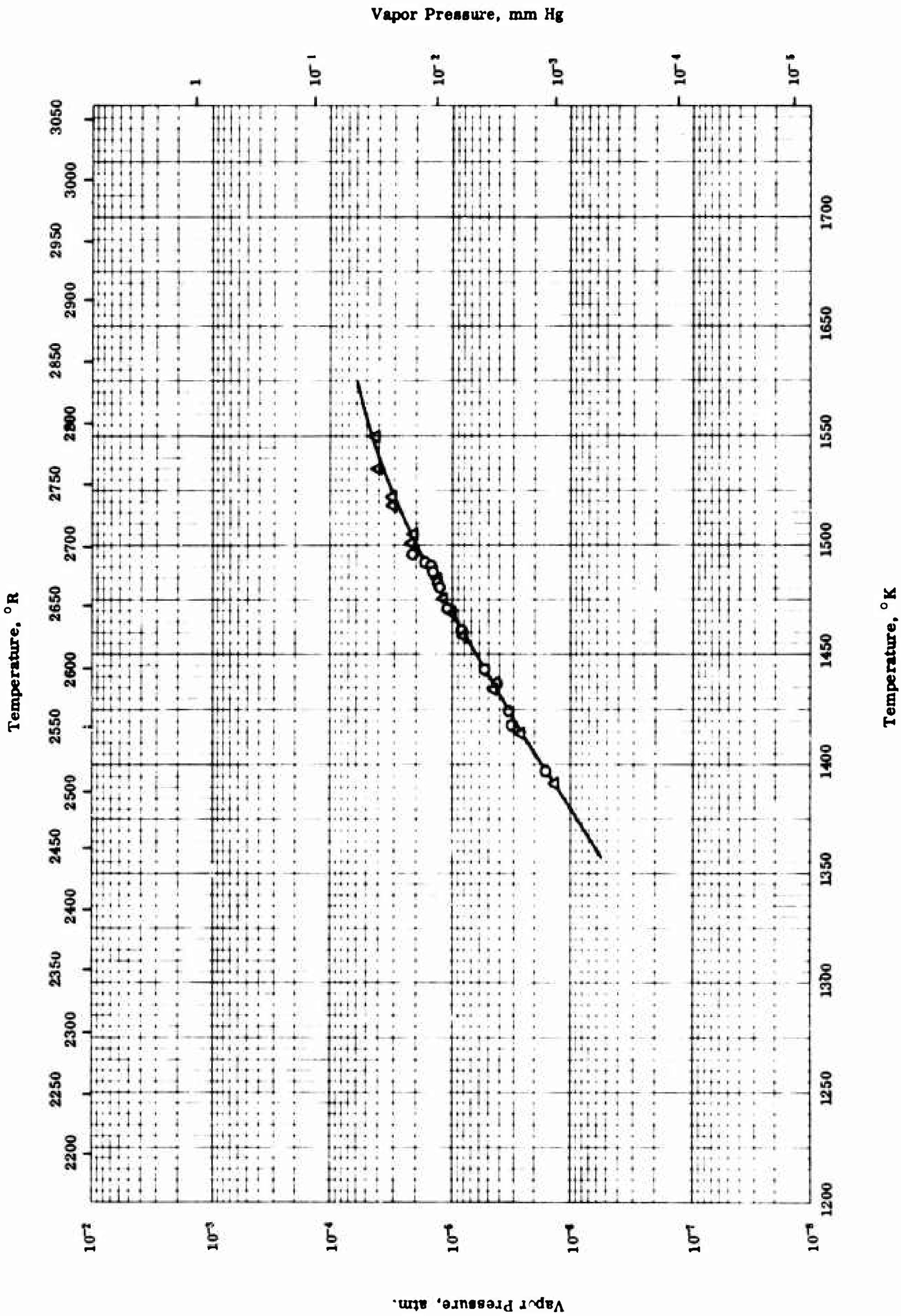


THERMAL LINEAR EXPANSION -- ZINC ALUMINATE

THERMAL LINEAR EXPANSION -- ZINC ALUMINATE

REFERENCE INFORMATION

Symbol	Ref	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-35	298-1473		$ZnO \cdot Al_2O_3$.	
△	57-34	293-1473		$ZnO \cdot Al_2O_3$; prepared from reagent grade materials.	X-ray back reflection method.



VAPOR PRESSURE -- ALUMINUM BORATE

VAPOR PRESSURE -- ALUMINUM BORATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-11	1397-1496		$B_2O_3 \cdot 2Al_2O_3$; prepared from pure oxides.	Prepared by heating stoichiometric amount of pure oxides in a platinum crucible at 600 - 900 C under an argon atmosphere; B_2O_3 the only gas phase component; and reaction: $B_2O_3 \cdot 2Al_2O_3 \rightarrow B_2O_3 + 2B_2O_3 \cdot 9Al_2O_3$ occured; no $B_2O_3 \cdot 2Al_2O_3$ remained when it was heated to higher than 1100 C.
△	63-11	1392-1549		Same as above.	Same as above.

PROPERTIES OF CALCIUM BORATES

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Melting Point	1435*	2583*
Heat of Fusion	141*	253*

*For $CaO \cdot B_2O_3$ only

REPORTED VALUES

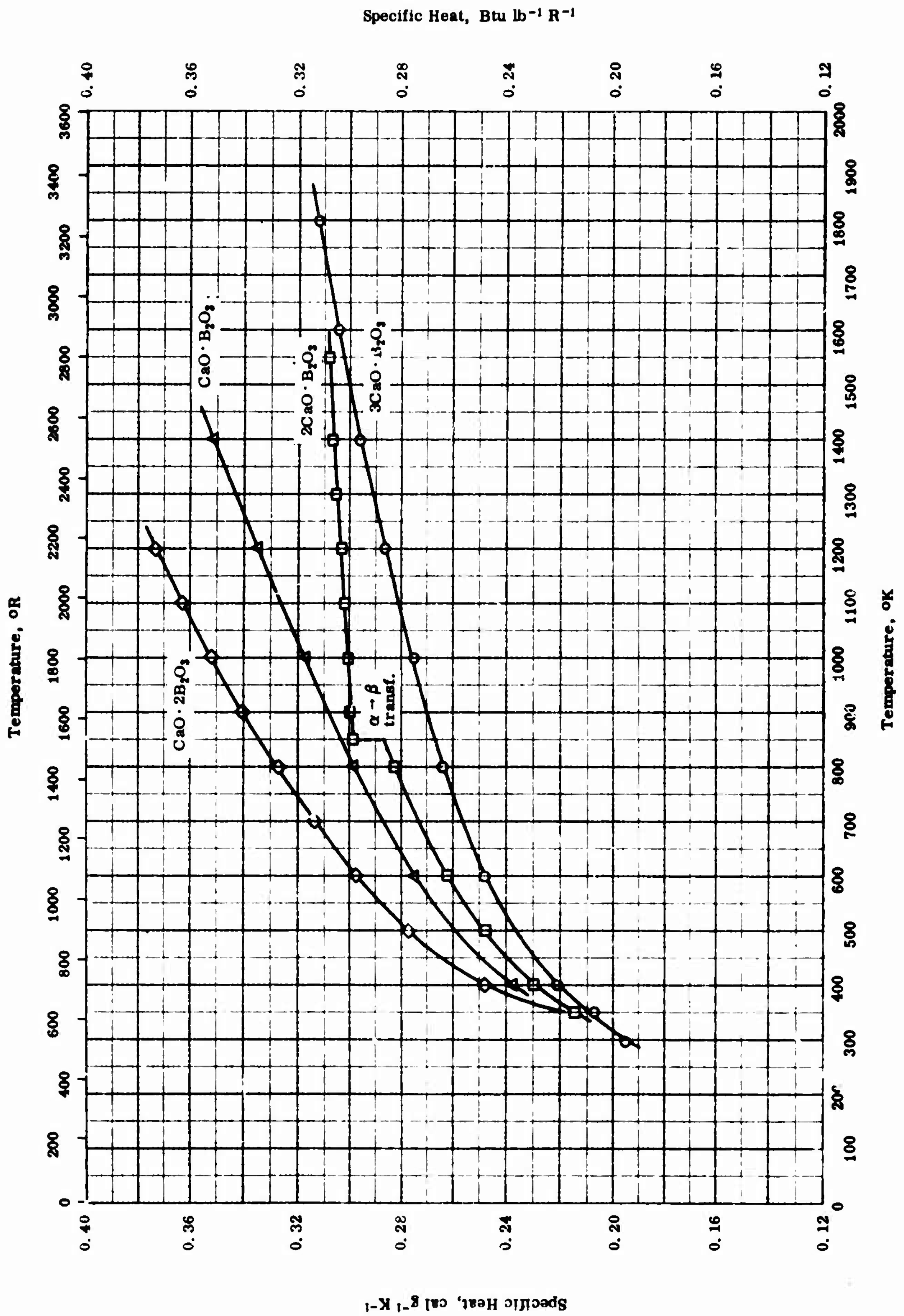
Melting Point	K	R
○ $3\,CaO \cdot B_2O_3$	1760	3168
□ $2\,CaO \cdot B_2O_3$	1585	2855
△ $CaO \cdot B_2O_3$	1435	2583
▽ $CaO \cdot 2B_2O_3$	1260	2268

Heat of Fusion	cal g^{-1}	Btu lb^{-1}
● $3\,CaO \cdot B_2O_3$	149	269
■ $2\,CaO \cdot B_2O_3$	133	239
▲ $CaO \cdot B_2O_3$	141	253
▼ $CaO \cdot 2\,B_2O_3$	139	249

PROPERTIES OF CALCIUM BORATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	48-1	1760		3 $CaO \cdot B_2O_3$.	
□	48-1	1585		2 $CaO \cdot B_2O_3$.	
△	48-1	1435		$CaO \cdot B_2O_3$.	
▽	48-1	1260		$CaO \cdot 2 B_2O_3$.	
●	48-1	1760		3 $CaO \cdot B_2O_3$.	Δh_f from enthalpy difference at M. P. between liquid and solid phase.
■	48-1	1585		2 $CaO \cdot B_2O_3$.	Same as above.
▲	48-1	1435		$CaO \cdot B_2O_3$.	Same as above.
▼	48-1	1260		$CaO \cdot 2 B_2O_3$.	Same as above.



SPECIFIC HEAT -- CALCIUM BORATE

SPECIFIC HEAT -- CALCIUM BORATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	48-1	372-1856		$3CaO \cdot B_2O_3$; Colemanite.	
□	48-1	382-1821		$2CaO \cdot B_2O_3$; α and β crystals.	
△	48-1	436-1678		$CaO \cdot B_2O_3$.	
◇	48-1	370-1800		$CaO \cdot 2B_2O_3$.	

PROPERTIES OF LITHIUM METABORATE

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Heat of Sublimation	1765	3177

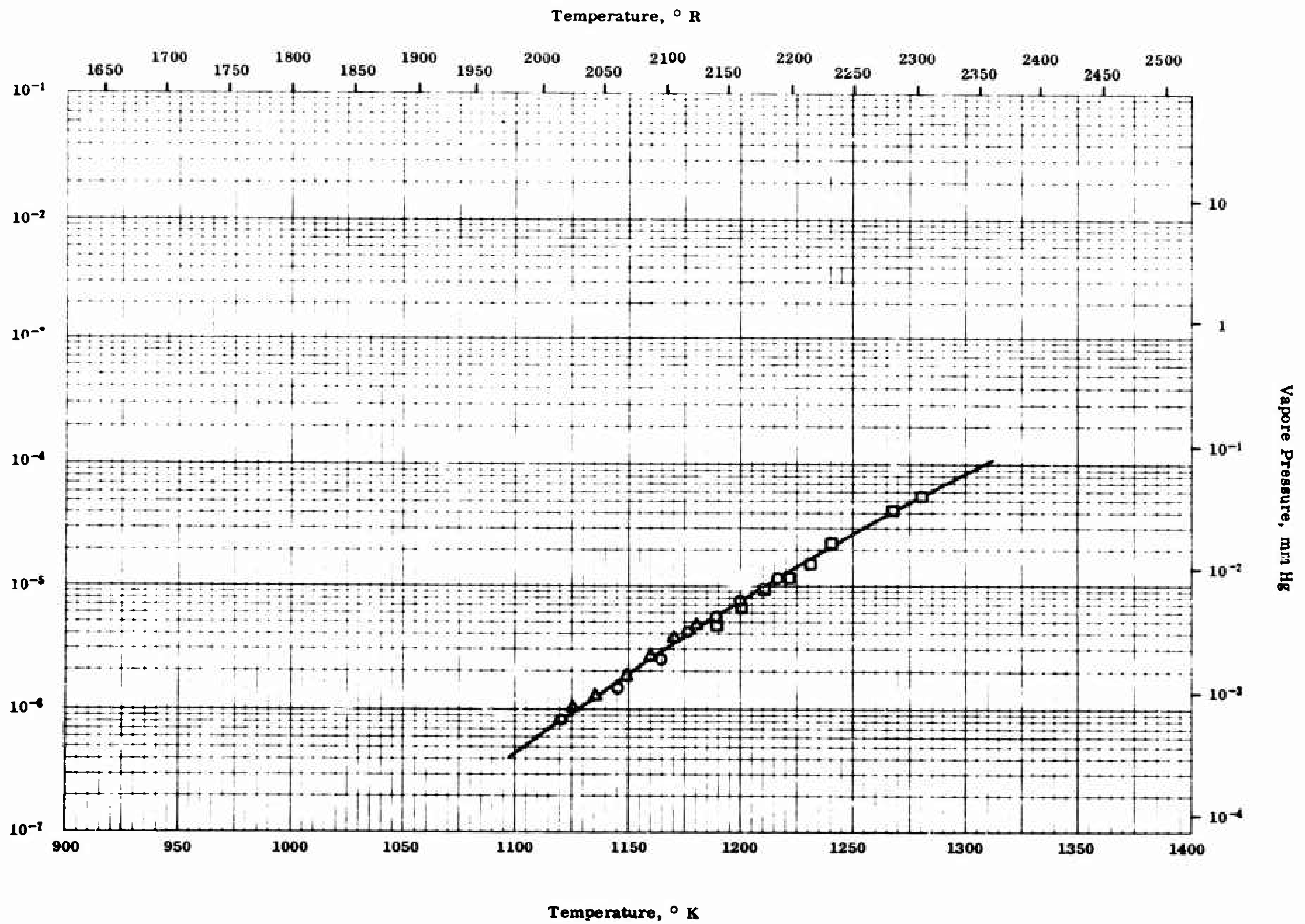
REPORTED VALUES

Heat of Sublimation:		cal g^{-1}	Btu lb^{-1}
	O	1765	3177

PROPERTIES OF LITHIUM METABORATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	63-11	298		$LiBO_2$.	

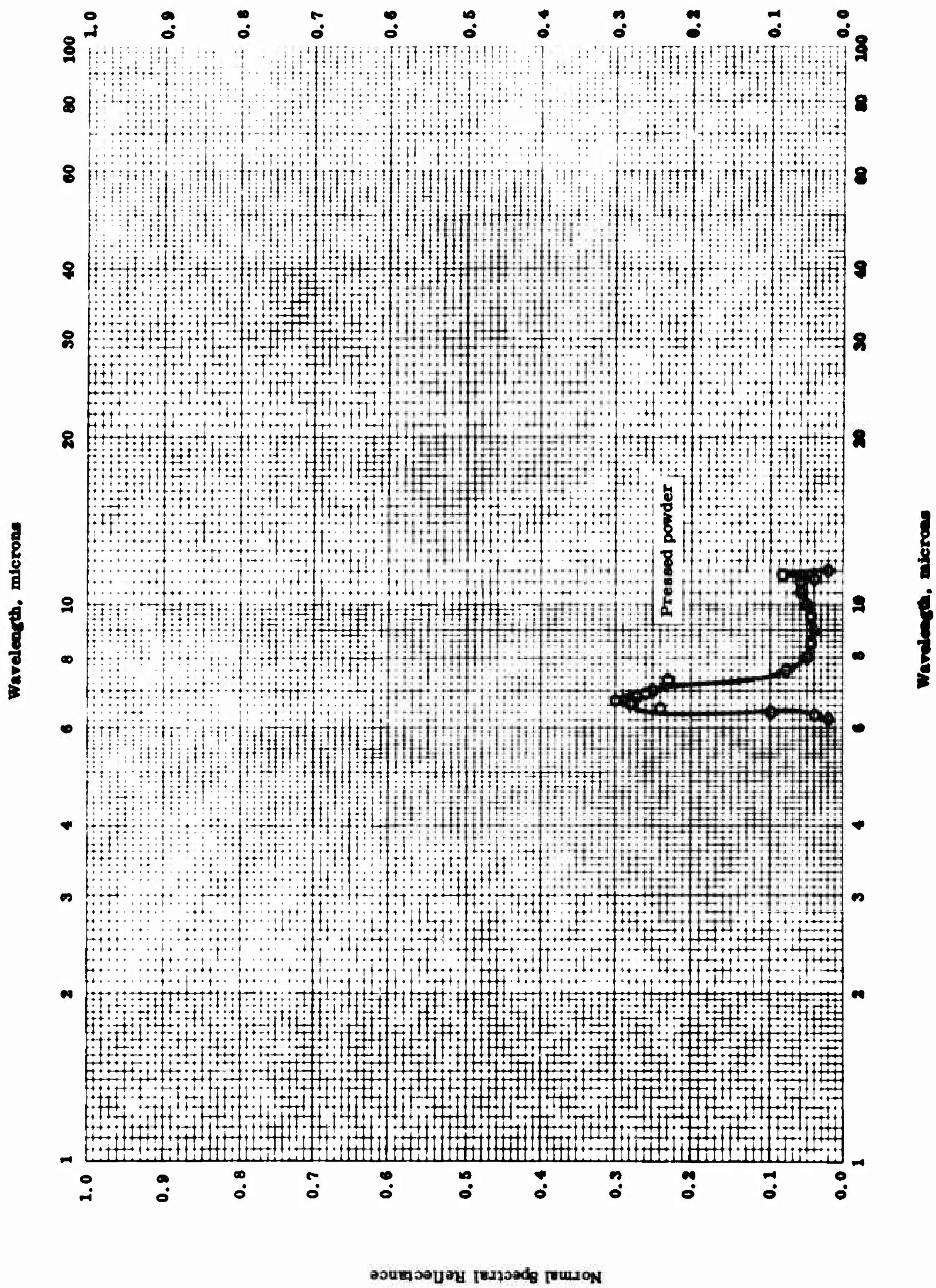


VAPOR PRESSURE -- LITHIUM METABORATE

VAPOR PRESSURE -- LITHIUM METABORATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-11	1121-1217		$LiBO_2$ >99.2 purity.	Prepared by heating stoichiometric mixture of lithium carbonate and boric oxide to 900 C under vacuum.
□	63-11	1190-1280		Same as above.	Same as above.
△	63-11	1126-1182		Same as above.	Same as above.

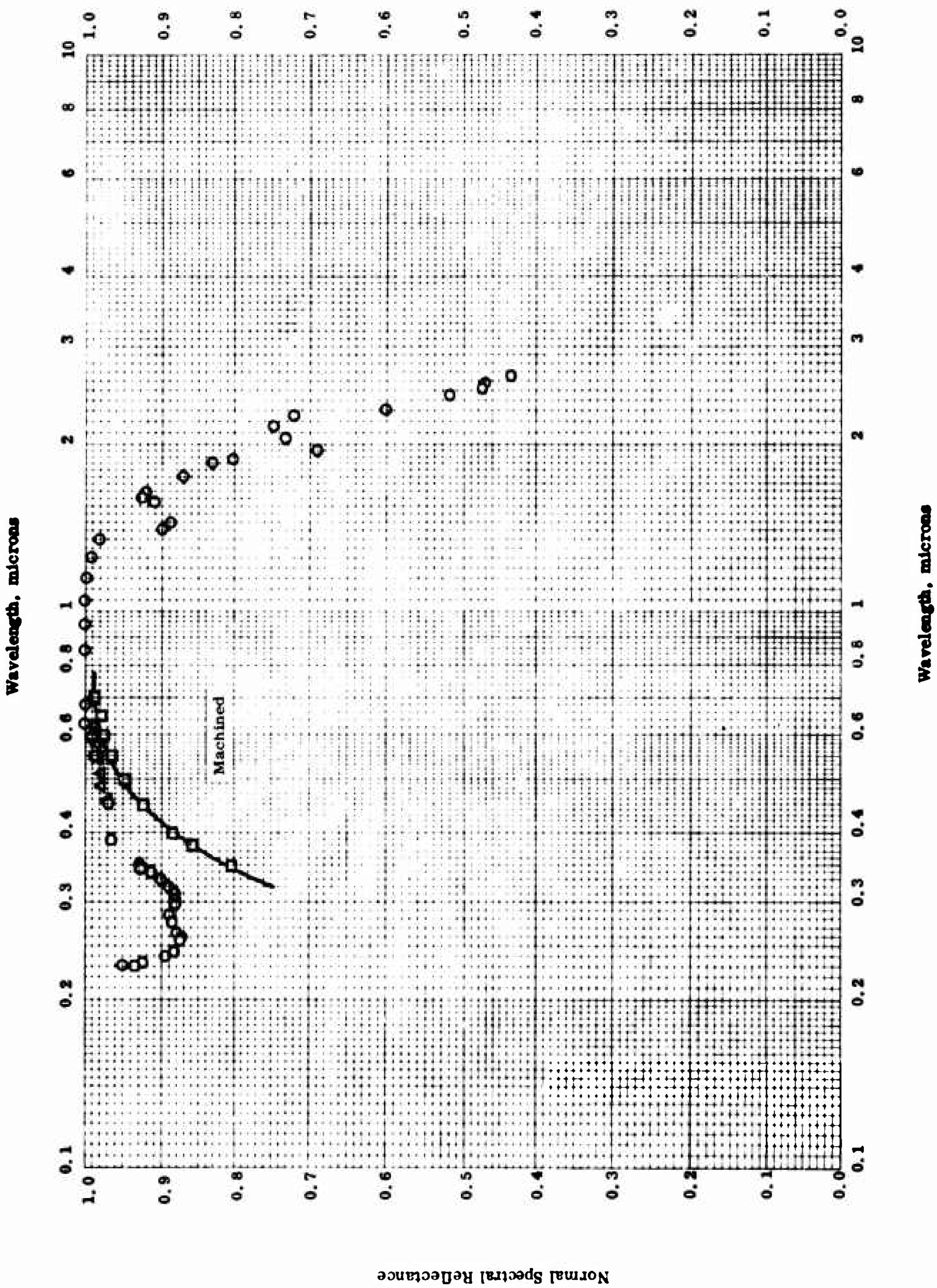


NORMAL SPECTRAL REFLECTANCE -- CALCIUM CARBONATE

NORMAL SPECTRAL REFLECTANCE -- CALCIUM CARBONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error%	Sample Specifications	Remarks
○	40-2	298	6.2-11.5		$CaCO_3$.	Powder pressed at 20,000 - 60,000 lb in^{-2}.

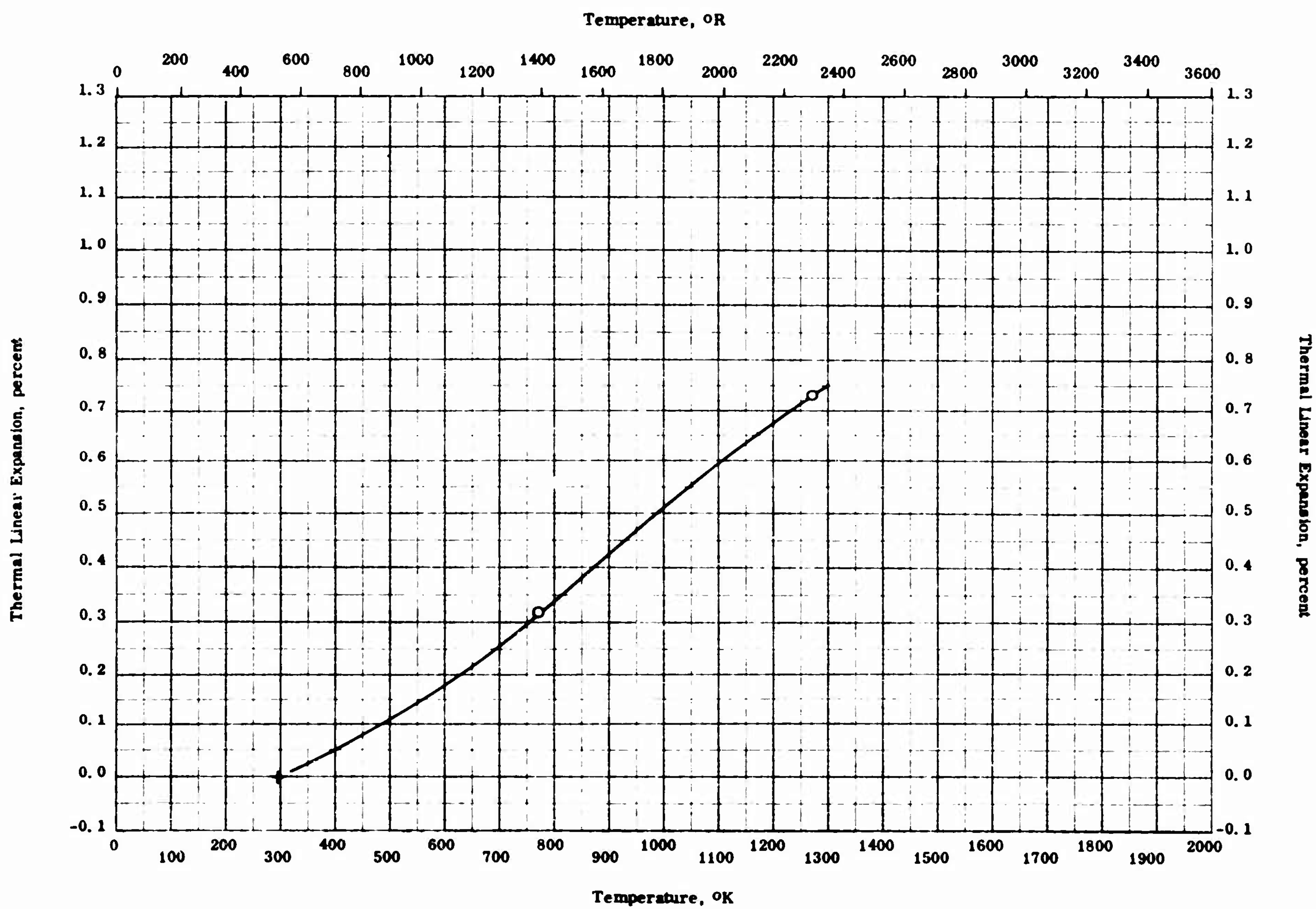


NORMAL SPECTRAL REFLECTANCE -- MAGNESIUM CARBONATE

NORMAL SPECTRAL REFLECTANCE -- MAGNESIUM CARBONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error%	Sample Specifications	Remarks
○	63-18	298	0.23-2.65	5	$MgCO_3$.	Rubbing one cut block against another; data taken from a curve; MgO as reference standard.
△	48-4	298	0.46-0.62		$MgCO_3$.	Machined surface.
□	57-16	298	0.35-0.7	0.4	$MgCO_3$.	

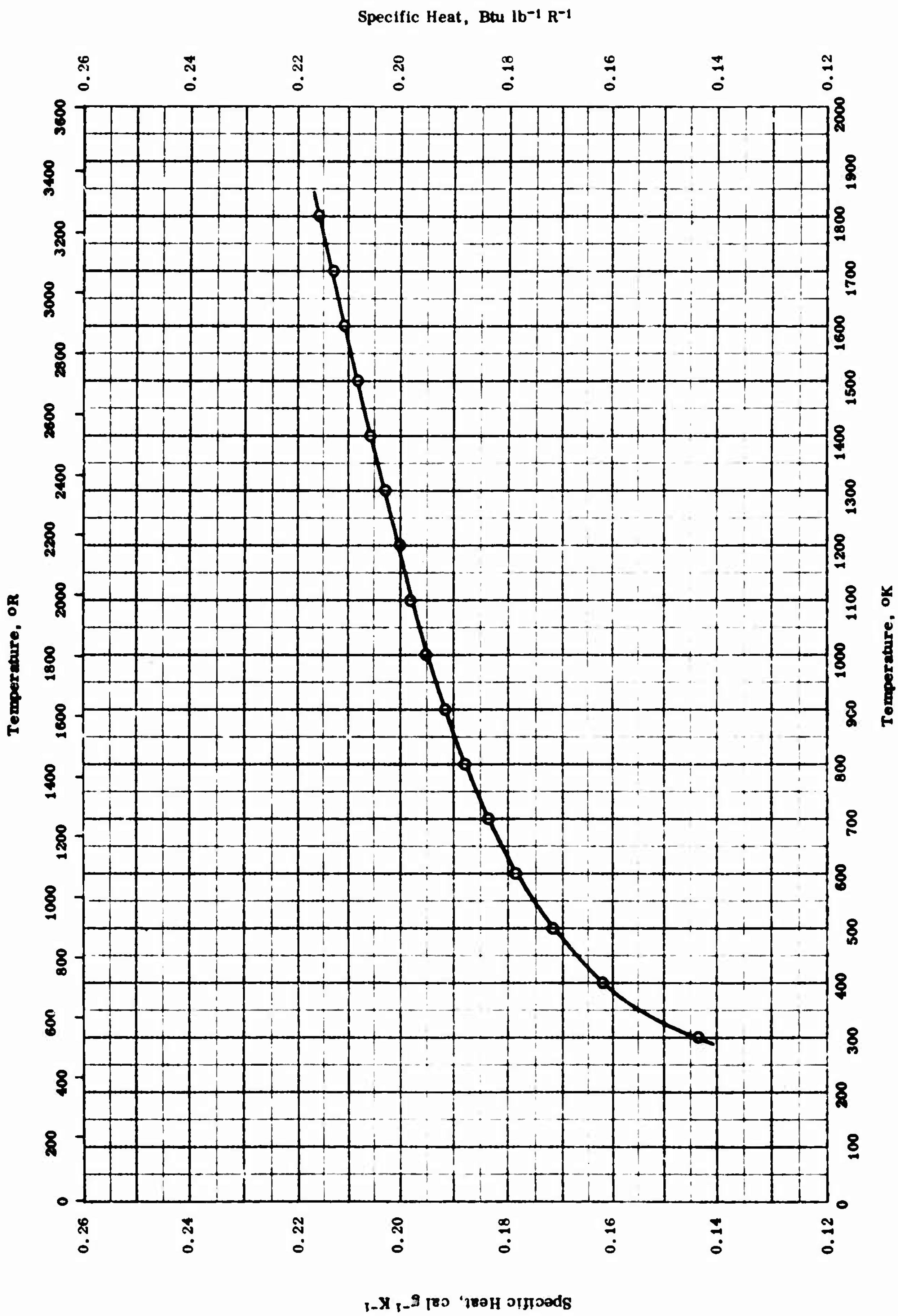


THERMAL LINEAR EXPANSION -- BERYLLIUM CHROMITE

THERMAL LINEAR EXPANSION -- BERYLLIUM CHROMITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-35	298-1273		$BeO \cdot Cr_2O_3$.	

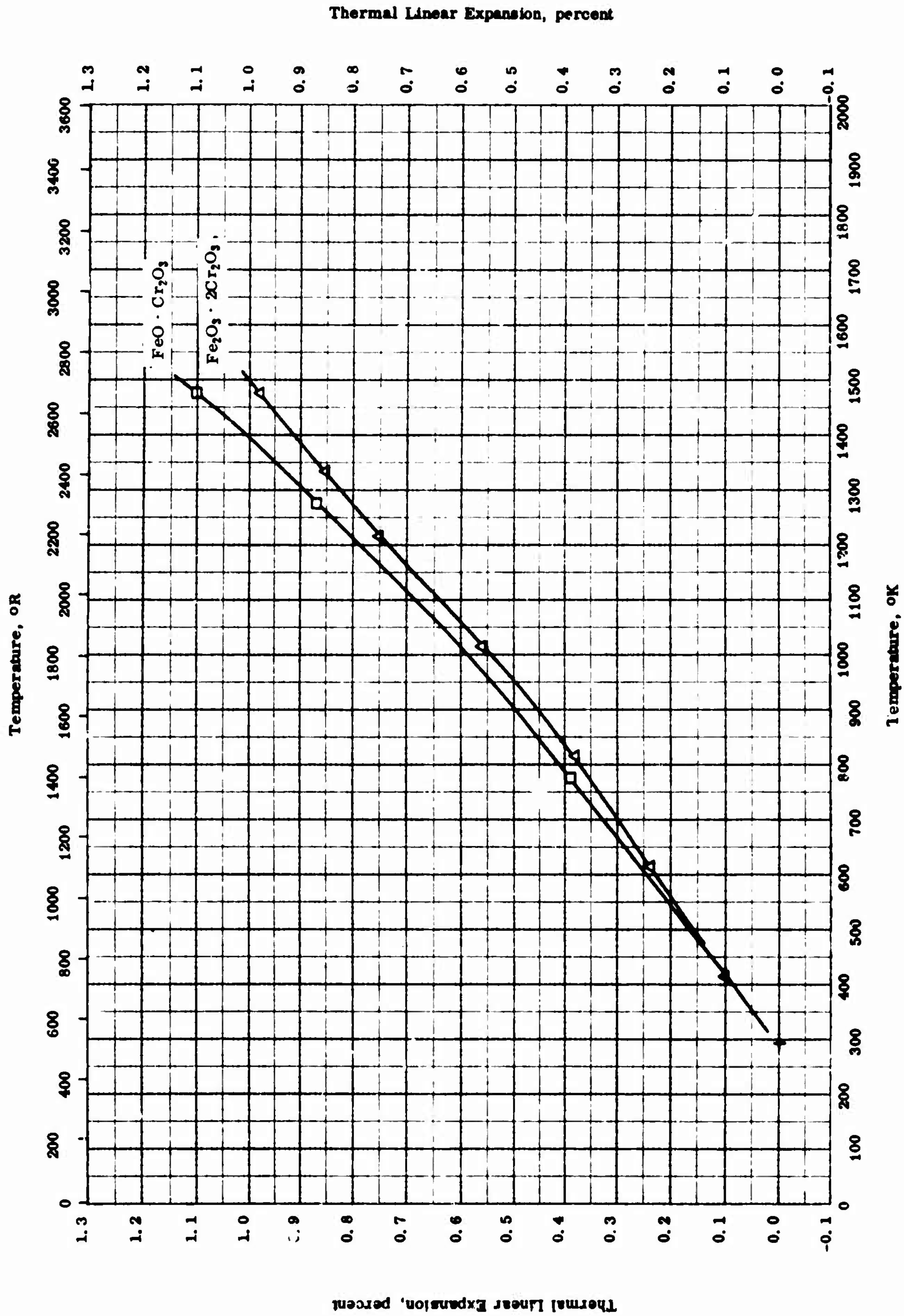


SPECIFIC HEAT -- IRON (OUS) CHROMITE

SPECIFIC HEAT -- IRON (OUS) CHROMITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	44-5	298-1800	0.3	$FeO \cdot Cr_2O_3$; 46.09 Cr, 24.77 Fe and 0.75 SiO_2.	Prepared by heating stoichiometric mixture of high grade sponge iron, reagent grade -245 ferric oxide and chromic oxide of high purity several days at 1300 - 1350 C in a slow stream of He.

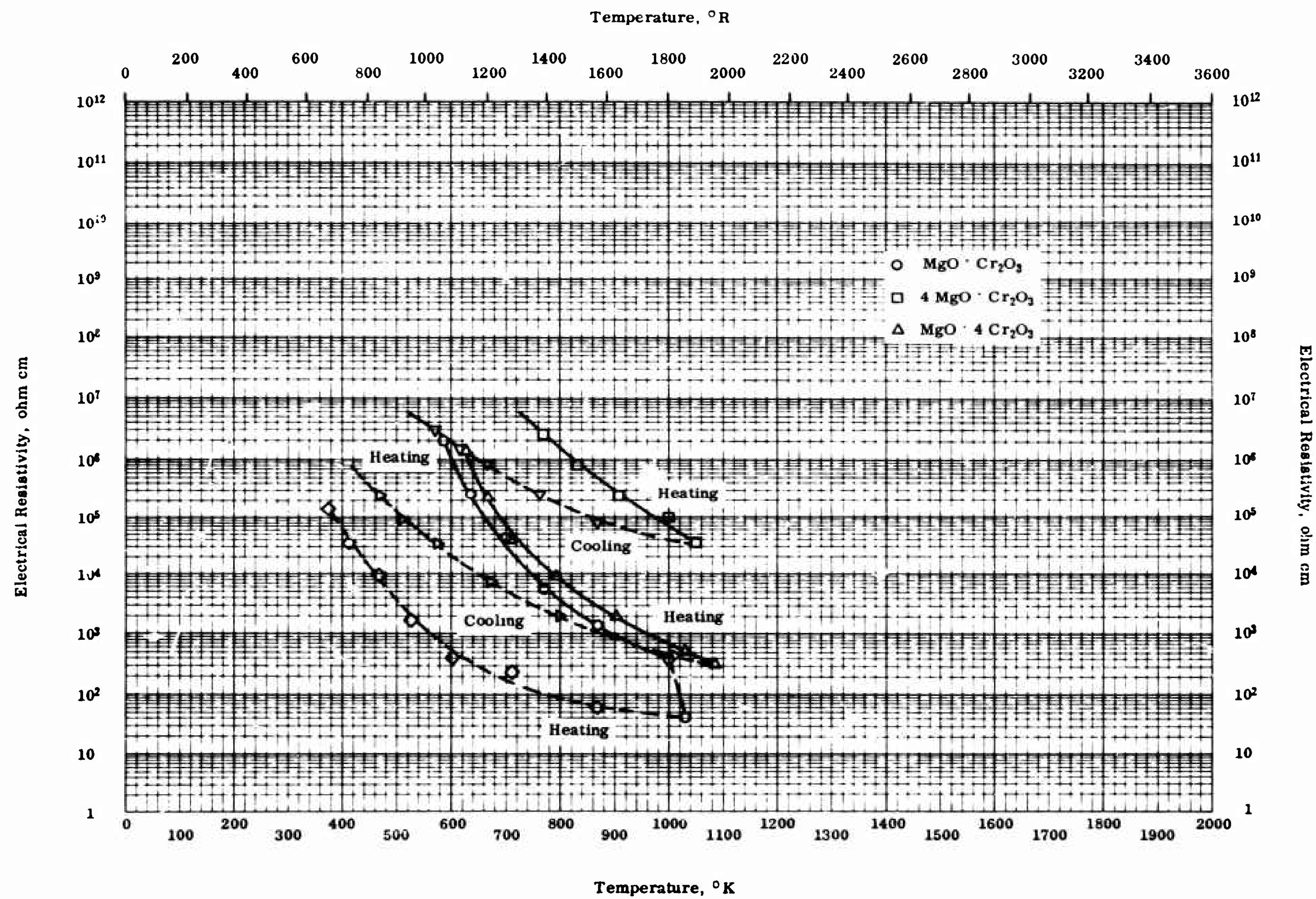


THERMAL LINEAR EXPANSION -- IRON CHROMITES

THERMAL LINEAR EXPANSION -- IRON CHROMITES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	60-35	298-1473		$FeO \cdot Cr_2O_3$.	
△	46-5	413-1472		Solid solution $Fe_2O_3 \cdot 2\ Cr_2O_3$; density 320 lb ft^{-3}.	

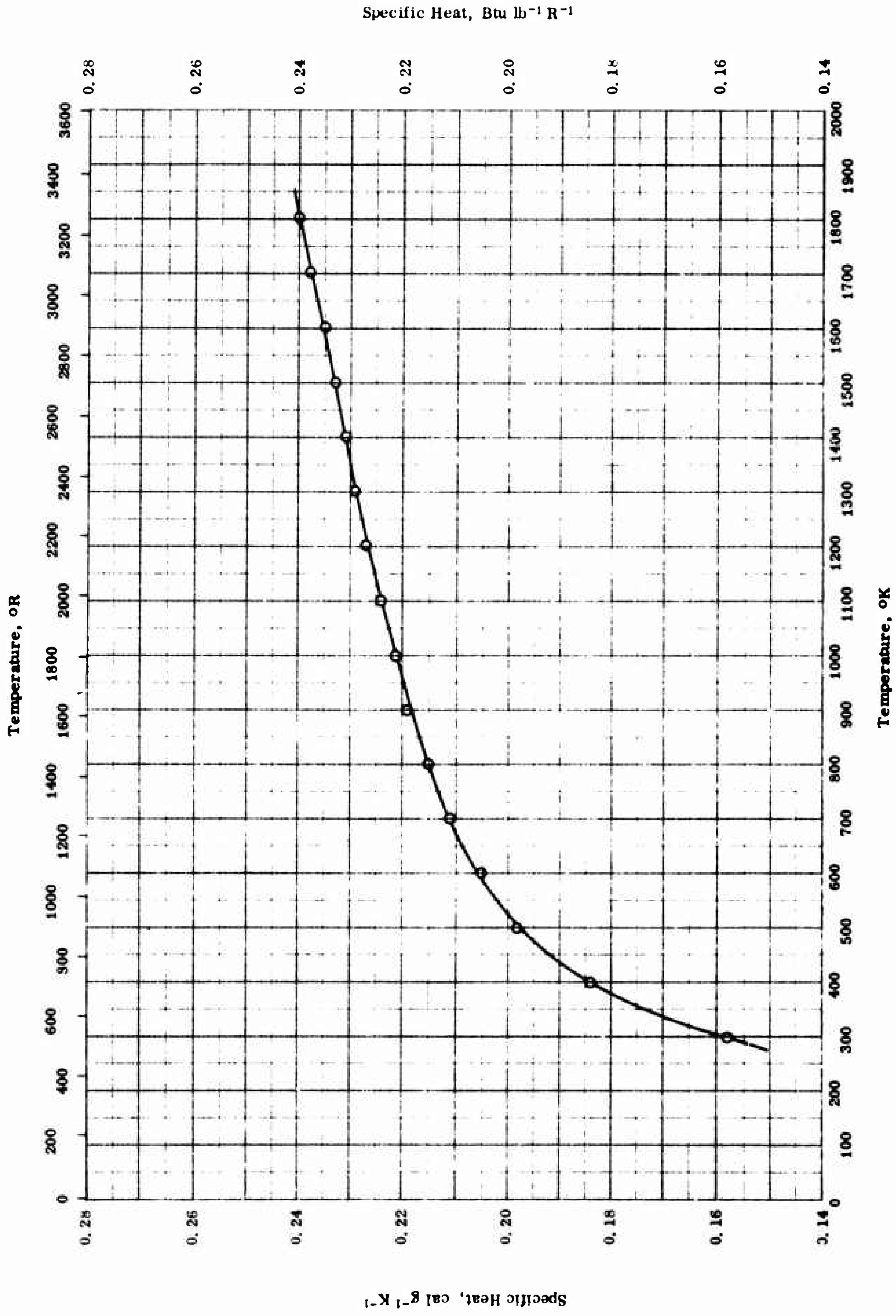


ELECTRICAL RESISTVITY -- MAGNESIUM CHROMITES

ELECTRICAL RESISTIVITY -- MAGNESIUM CHROMITES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-21	375-1021		$MgO \cdot Cr_2O_3$.	Not sintered; heating.
◇	55-21	375-1021		Same as above.	Cooling.
□	55-21	575-1053		4 $MgO \cdot Cr_2O_3$.	Not sintered; heating.
▽	55-21	575-1053		Same as above.	Cooling.
△	55-21	420-1086		$MgO \cdot 4\,Cr_2O_3$.	Not sintered; heating.
▷	55-21	420-1086		Same as above.	Cooling.

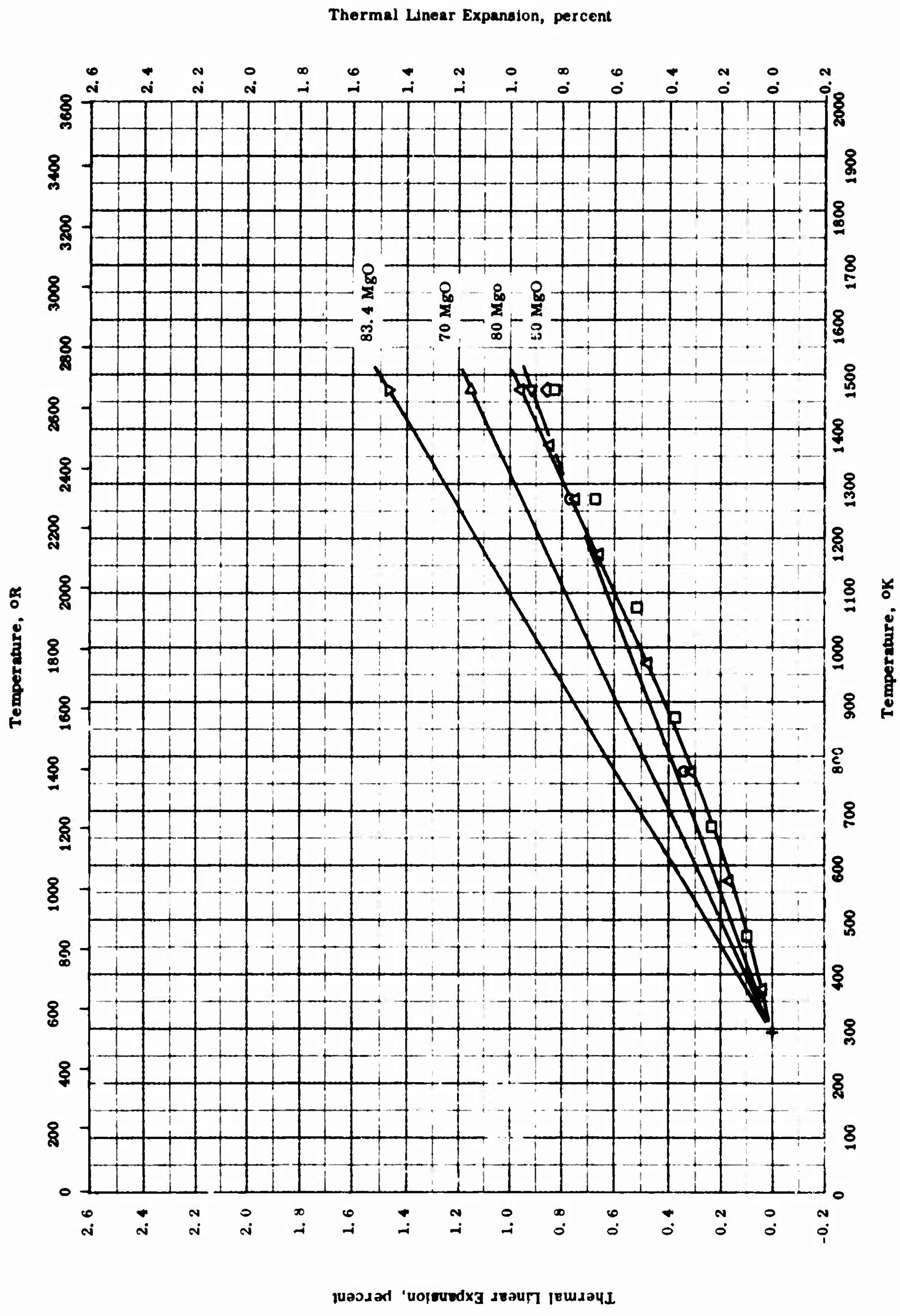


SPECIFIC HEAT -- MAGNESIUM CHROMITE

SPECIFIC HEAT -- MAGNESIUM CHROMITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	44-5	298-1800	0.30	$MgO \cdot Cr_2O_3$; 54.05 Cr, 12.57 Mg, and 0.14 Fe.	Prepared by reacting reagent grade MgO and Cr_2O_3 at 1400 C.

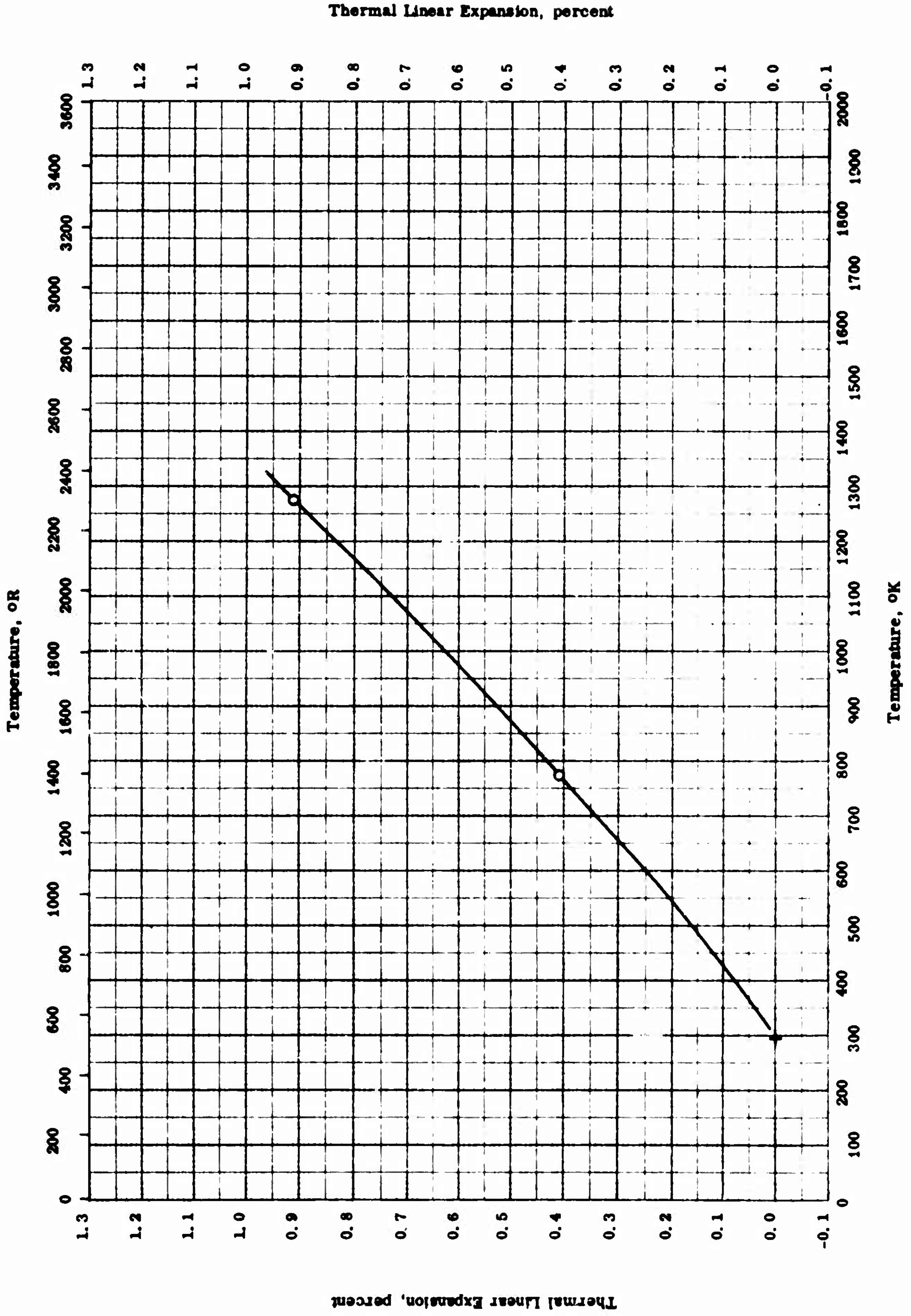


THERMAL LINEAR EXPANSION -- MAGNESIUM CHROMITES

THERMAL LINEAR EXPANSION -- MAGNESIUM CHROMITES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-35	298-1273		$MgO \cdot Cr_2O_3$.	
□	57-34	293-1473		Magnesium chromite (spinel).	Prepared from reagent grade materials.
△	46-5	372-1472		$MgCr_2O_4$, picrochromite; density 274 lb ft^{-3}.	Oxides mixed with 5% boric acid, molded, fired 2 hrs at 1530 C, crushed, molded, fired to 1530 C, crushed, molded, fired to 1530 C, crushed, molded, and reheated to 1530 C.
◇	46-7	293-1473		$MgO \cdot Cr_2O_3$; 79 Cr_2O_3 and 21 MgO.	Heated at 4 C min^{-1}.
▽	46-7	293-1473		83.4 MgO and 16.6 Cr_2O_3.	Same as above.
▷	46-7	293-1473		70 MgO and 30 Cr_2O_3.	Same as above.
◁	46-7	293-1473		50 MgO and 50 Cr_2O_3.	Same as above.

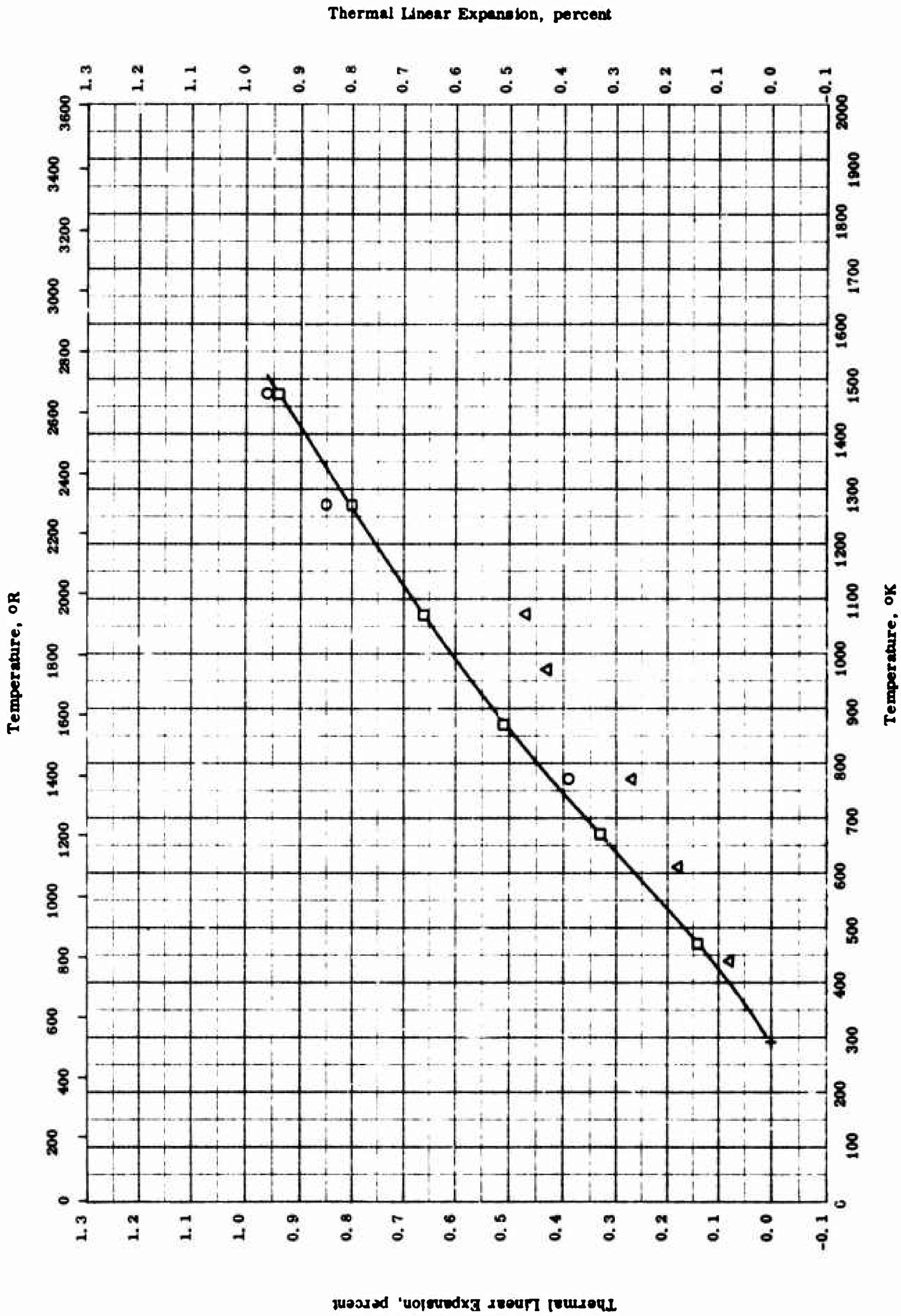


THERMAL LINEAR EXPANSION-- MANGANESE CHROMITE

THERMAL LINEAR EXPANION -- MANGANESE CHROMITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-35	298-1273		$MnO \cdot Cr_2O_3$.	

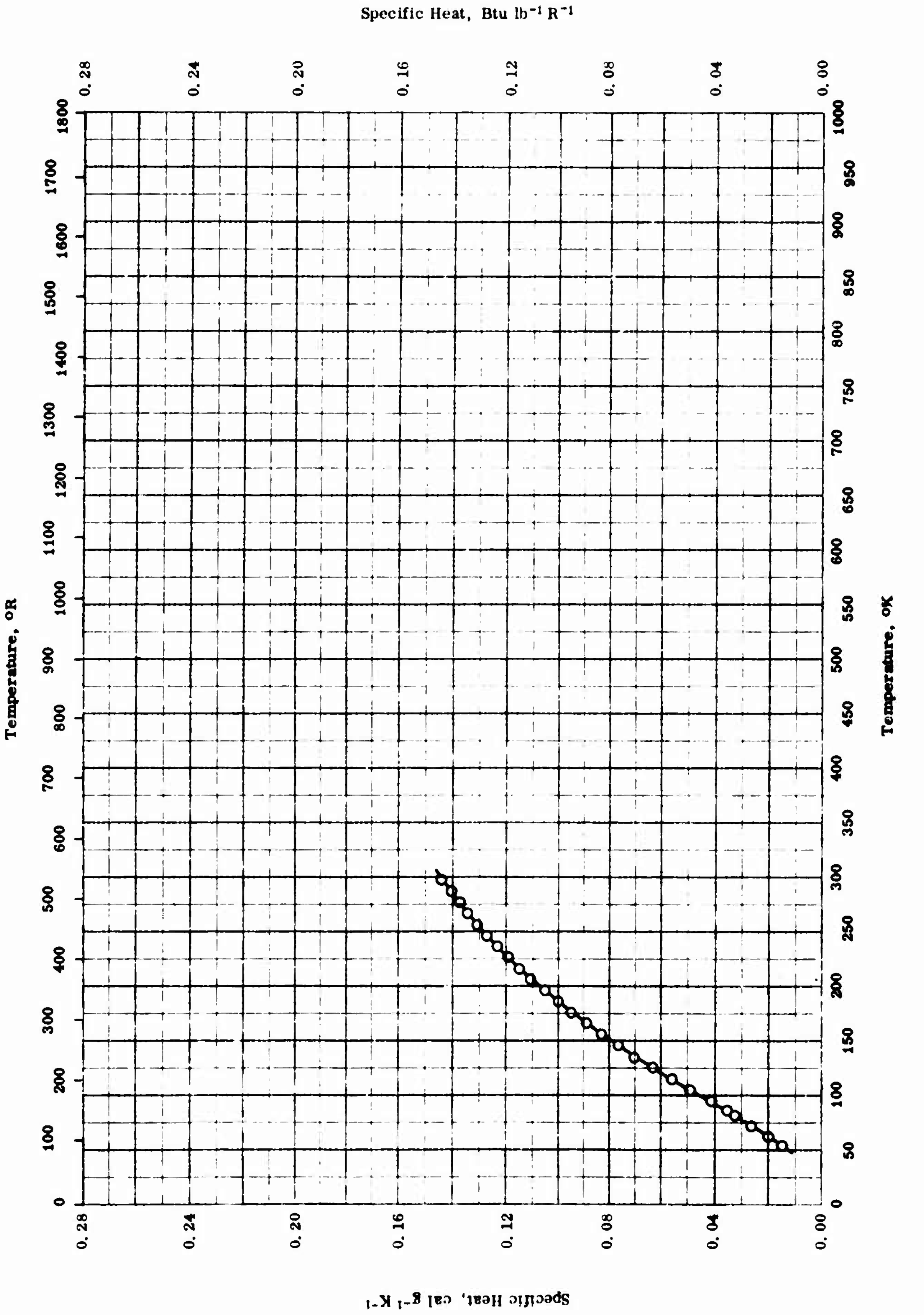


THERMAL LINEAR EXPANSION -- ZINC CHROMATE

THERMAL LINEAR EXPANSION -- ZINC CHROMATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-35	298-1473		$ZnO \cdot Cr_2O_3$.	
□	57-34	293-1473		Zinc chromate (spinel); prepared from reagent grade materials.	
△	46-6	293-1072		Zinc chromate.	

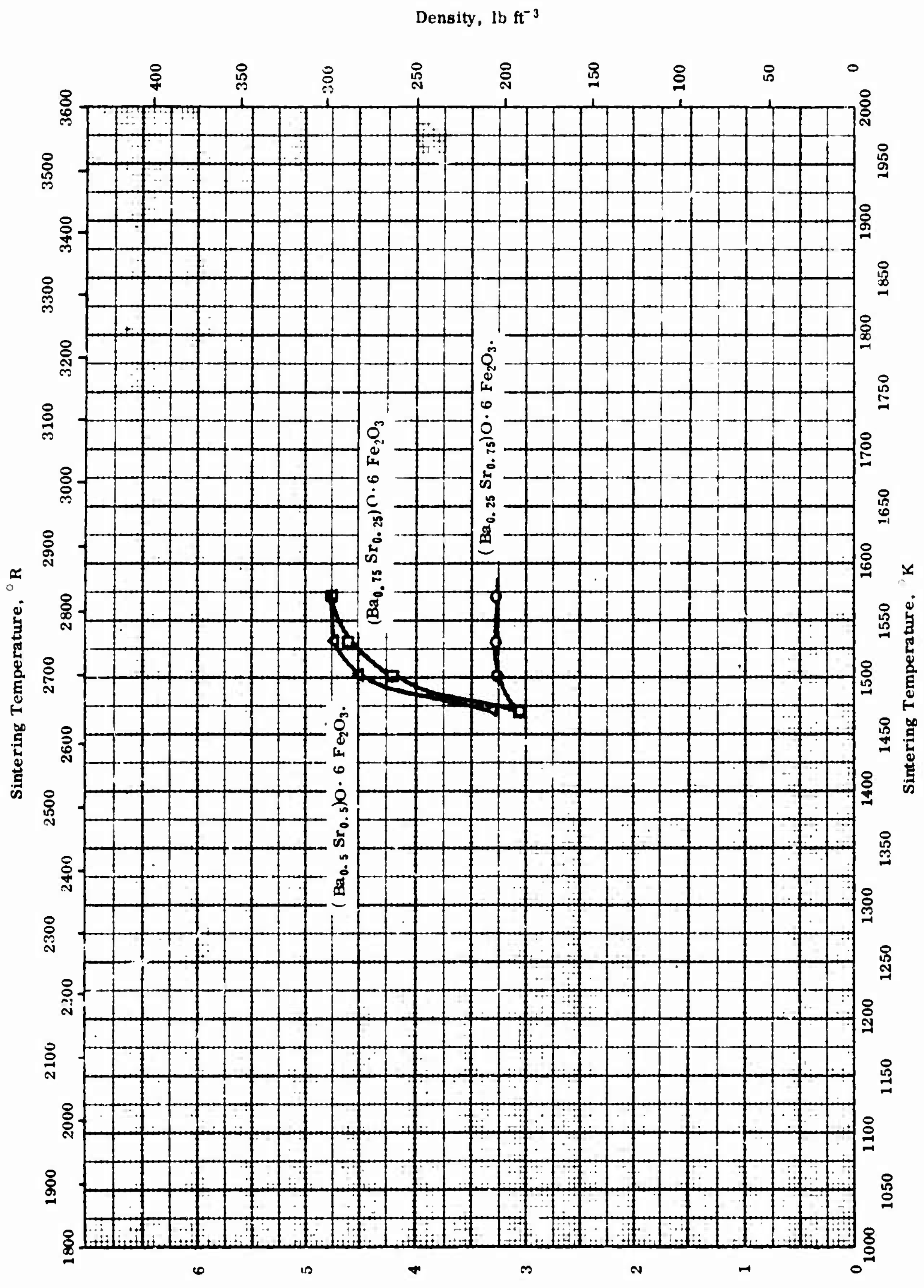


SPECIFIC HEAT -- IRON COBALTITE

SPECIFIC HEAT -- IRON COBALTITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	56-25	53-298		$FeCo_2O_4$; 49.6 Co, 26.88 O_2, and 23.47 Fe.	During preparation heated 4 times in air for total of 130 hrs at 1050 C with grinding, mixing, etc., between heats.

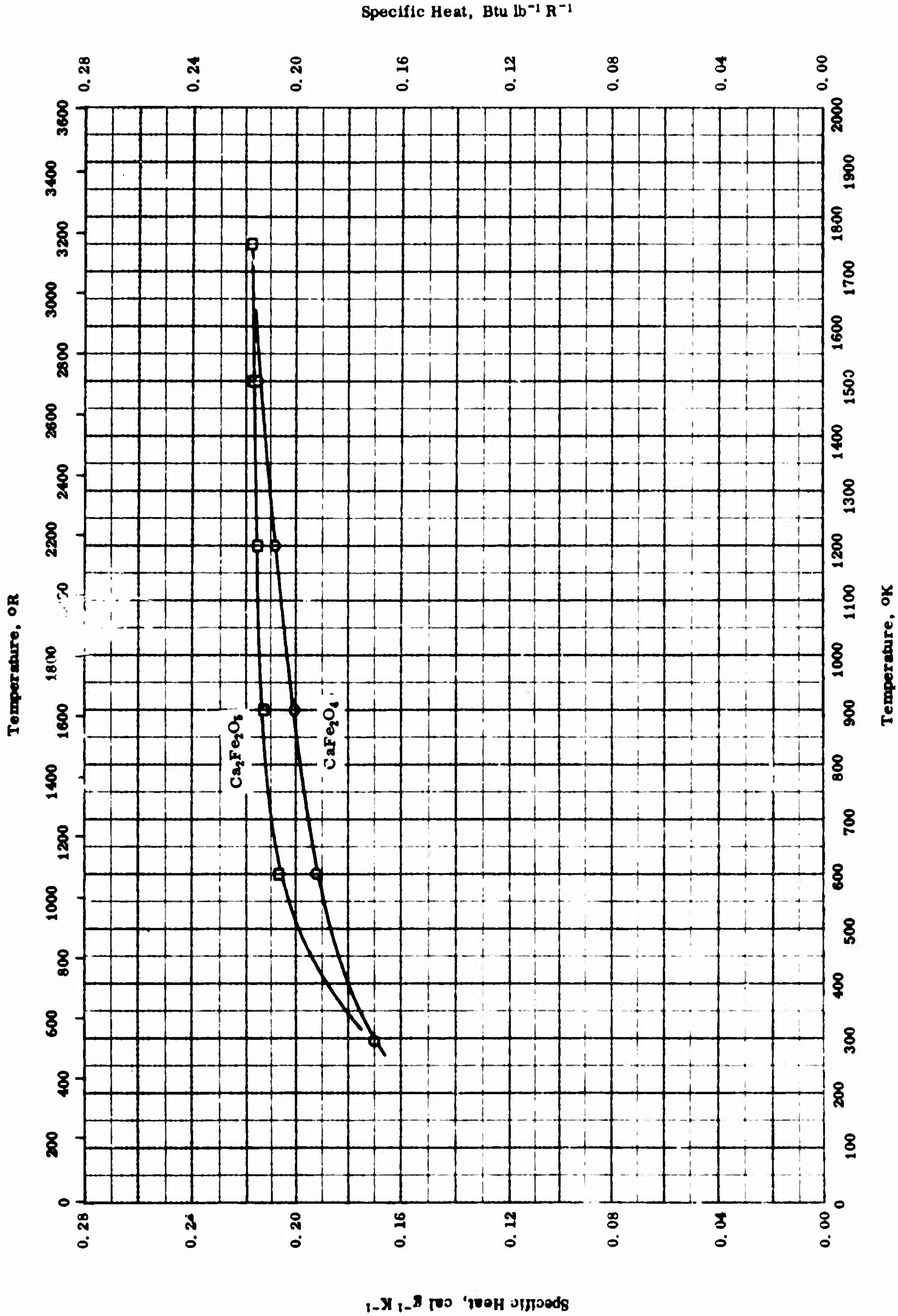


DENSITY -- BARIUM STRONTIUM FERRITES

DENSITY -- BARIUM STRONTIUM FERRITES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	62-15	1473-1573		$(Ba_{0.25}Sr_{0.75})O \cdot 6Fe_2O_3$.	Sintering stoichiometric amount of $SrCO_3$, $BaCO_3$ and Fe_2O_3 at 1200-1300 C.
△	62-15	1473-1573		$(Ba_{0.5}Sr_{0.5})O \cdot 6Fe_2O_3$.	Same as above.
□	62-15	1473-1573		$(Ba_{0.75}Sr_{0.25})O \cdot 6Fe_2O_3$.	Same as above.

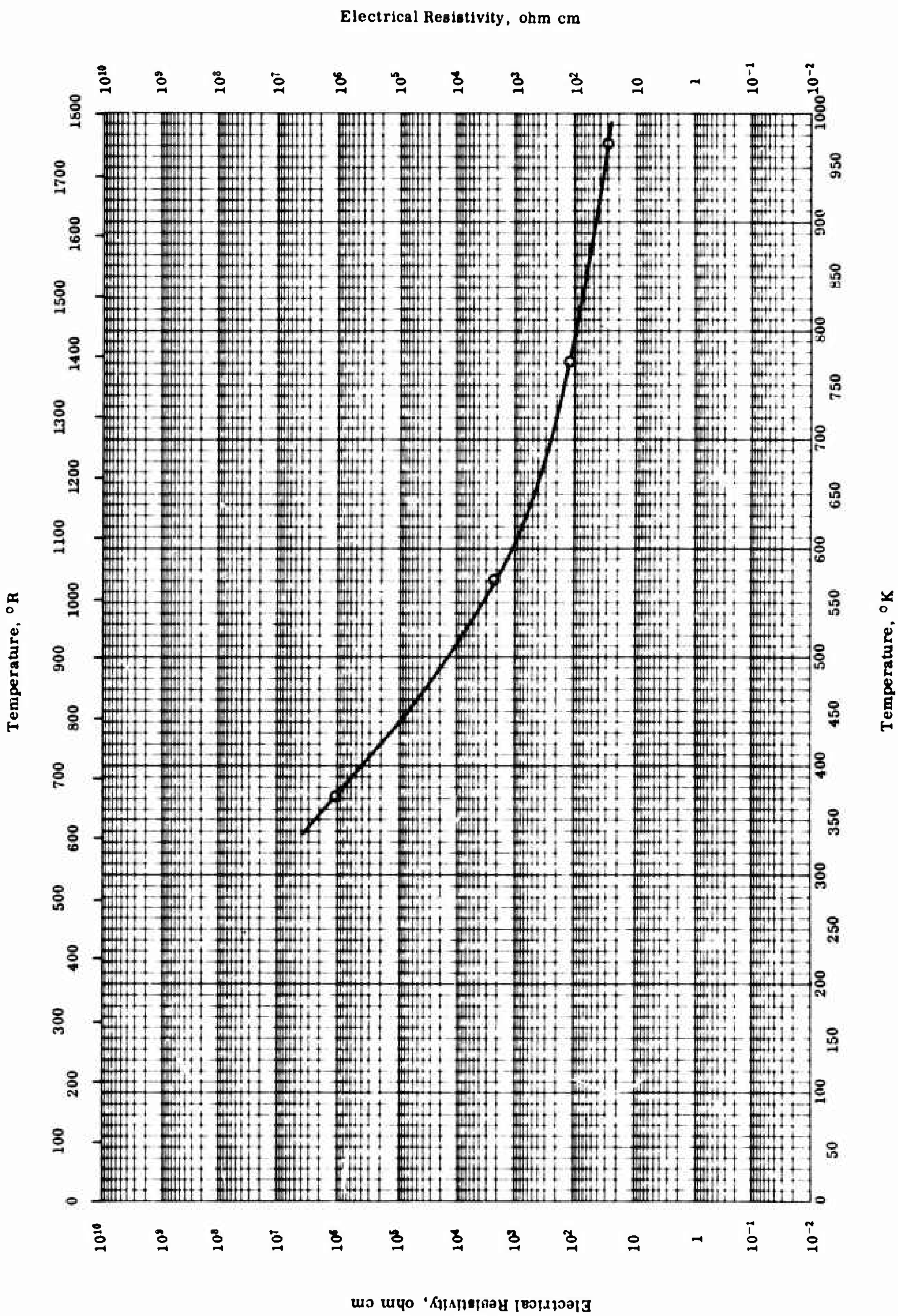


SPECIFIC HEAT -- CALCIUM FERRITE

SPECIFIC HEAT -- CALCIUM FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-29	297-1853		$CaFe_2O_4$; 74.05 Fe_2O_3 (74.0 theoretical) 26.05 CaO (25.99 theoretical).	Prepared from reagent grade Fe_2O_3 and $CaCO_3$; ground mixed; heated to 1000 - 1200 C for several hours; repeated several times adjusting composition between heating cycles.
□	54-29	297-1839		$Ca_2Fe_2O_5$; 58.71 Fe_2O_3, 41.27 CaO; raw material [illegible]e as above.	Same as above except heated to 850 to 1230 C.

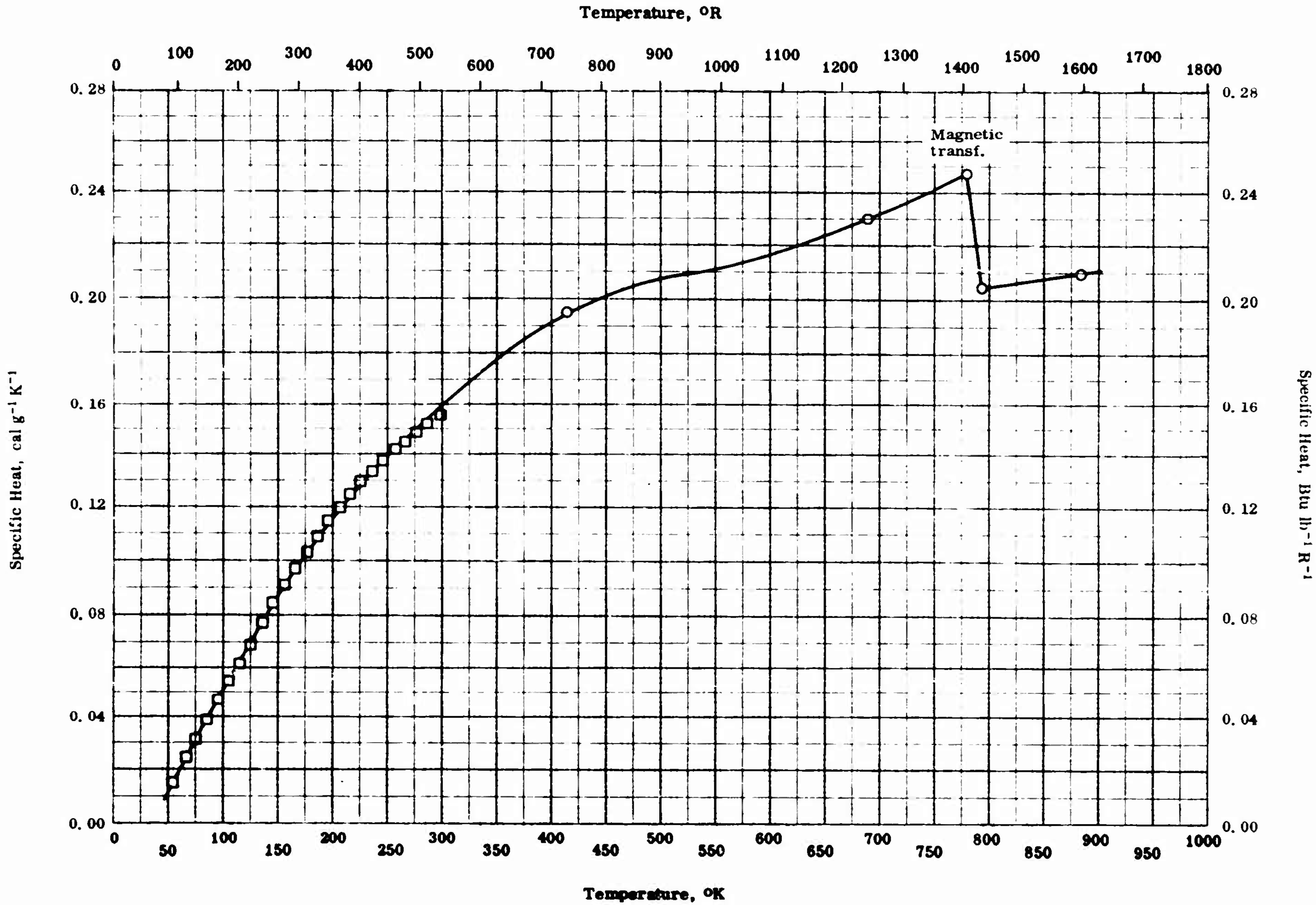


ELECTRICAL RESISTIVITY -- COBALT FERRITE

ELECTRICAL RESISTIVITY -- COBALT FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	51-12	373-973		$Fe_2O_3 \cdot CoO$	Sintered discs.

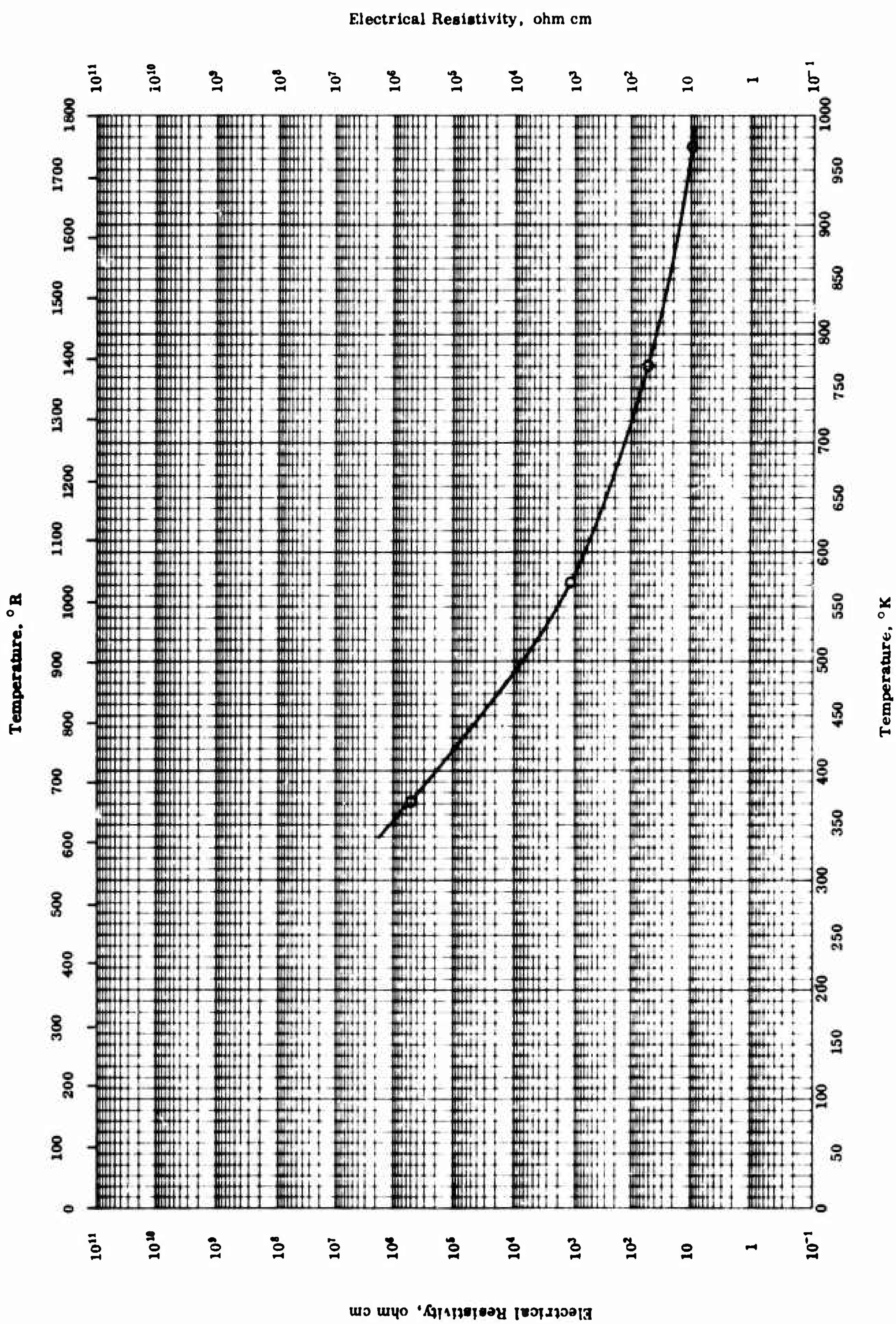


SPECIFIC HEAT -- COBALT FERRITE

SPECIFIC HEAT -- COBALT FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	51-21	413-883		$CoFe_2O_4$ ($Fe_2O_3 \cdot CoO$).	
□	56-25	53-298		$CoFe_2O_4$ ($Fe_2O_3 \cdot CoO$); 68.08 Fe_2O_3, 31.96 CoO and 0.07 SiO_2.	Ground, mixed, analyzed, composition adjusted; heated 5 times for 9 days at 950 - 1350 C.

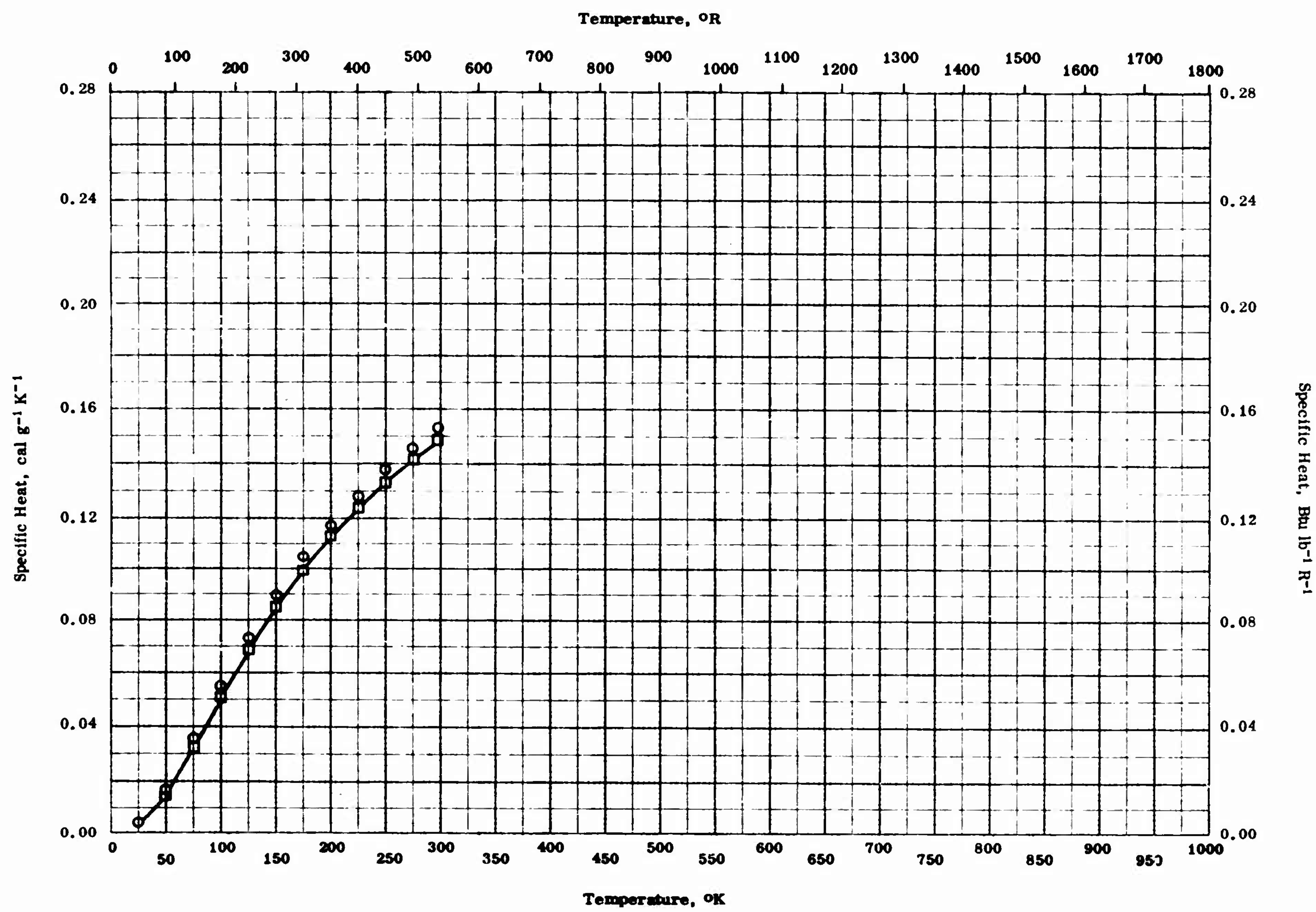


ELECTRICAL RESISTIVITY -- COPPER FERRITE

ELECTRICAL RESISTIVITY -- COPPER FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	51-12	373-973		$Fe_2O_3 \cdot CuO$.	Sintered discs.

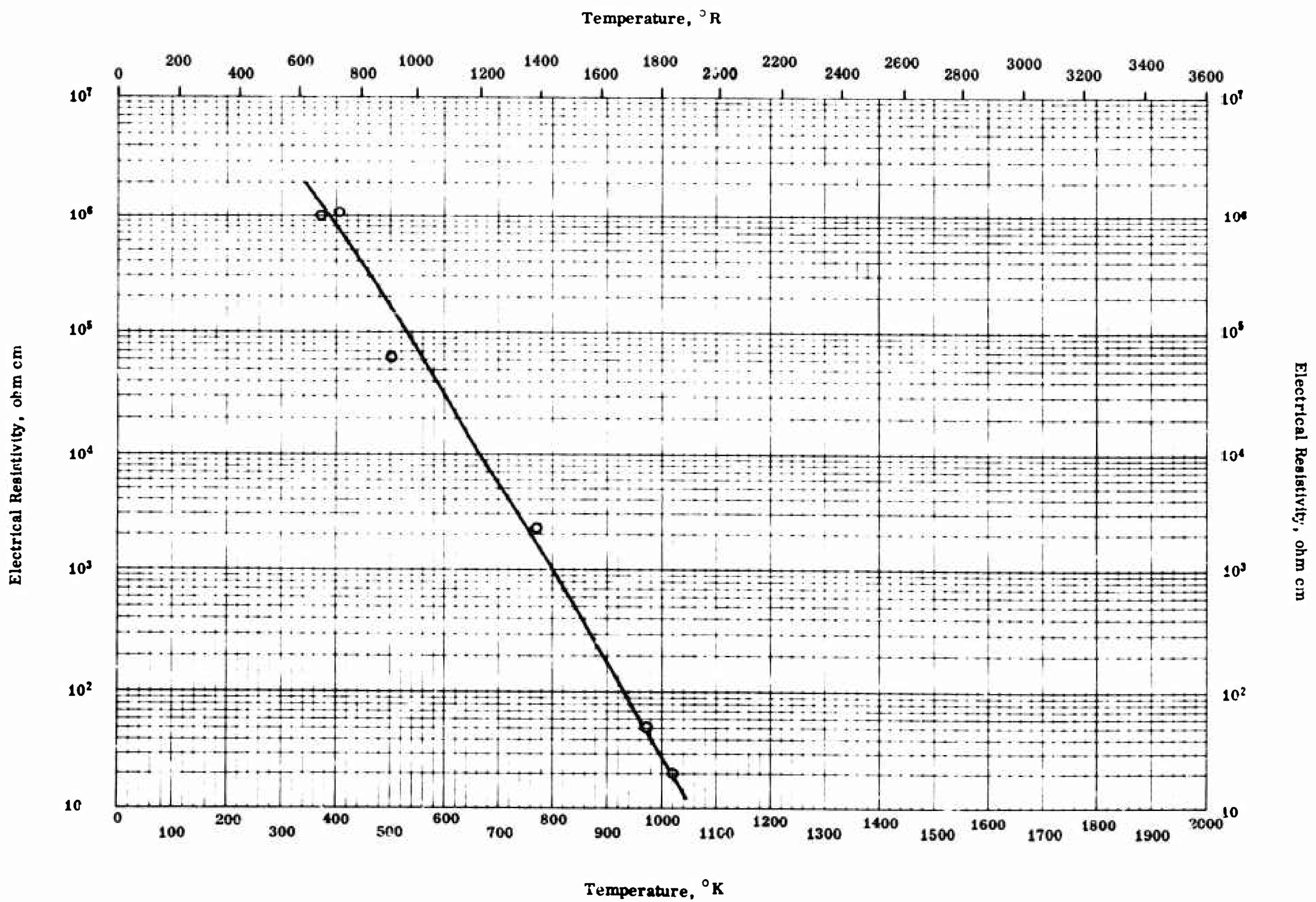


SPECIFIC HEAT -- COPPER FERRITE

SPECIFIC HEAT -- COPPER FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-16	50-298		$Cu_{0.75}Fe_{2.25}O_4$; 52.99 Fe, 26.91 O_2, 20.08 Cu, and 0.02 Si.	Prepared by heating reagent grade CuO and Fe_2O_3 170 hrs at 900 - 1000 C, 108 hrs at 1000 - 1100 C, 48 hrs at 1150 C and 2 hrs at 1250 C.
□	59-16	50-298		$CuFe_2O_4$ ($CuO \cdot Fe_2O_3$); 46.67 Fe, 26.69 O_2, 26.57 Cu, 0.02 Si, and 0.02 H_2O.	Prepared from reagent grade CO and Fe_2O_3 by prolonged sintering.

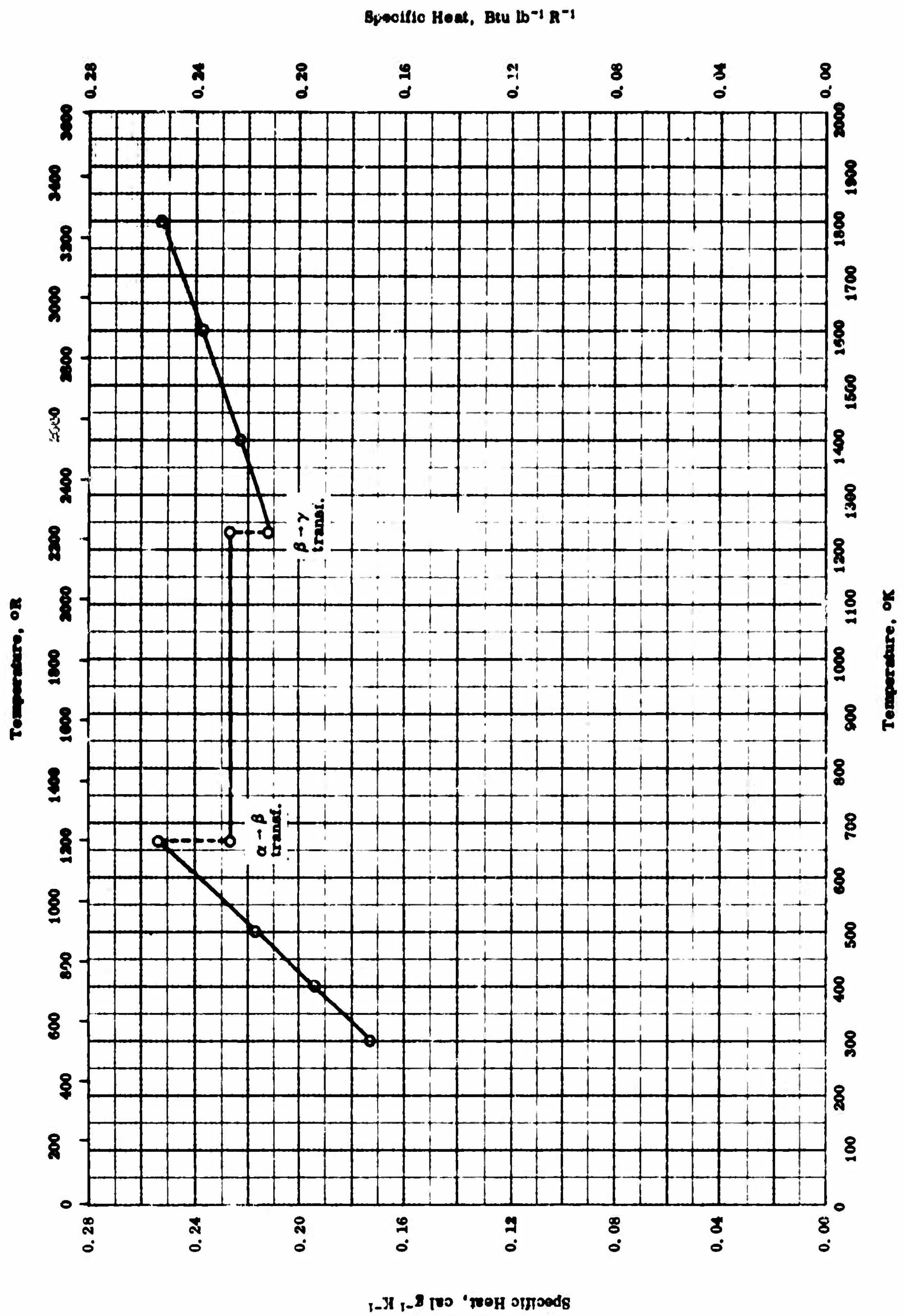


ELECTRICAL RESISTIVITY -- MAGNESIUM FERRITE

ELECTRICAL RESISTIVITY -- MAGNESIUM FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	51-12	373-1020		$MgO \cdot Fe_2O_3$.	

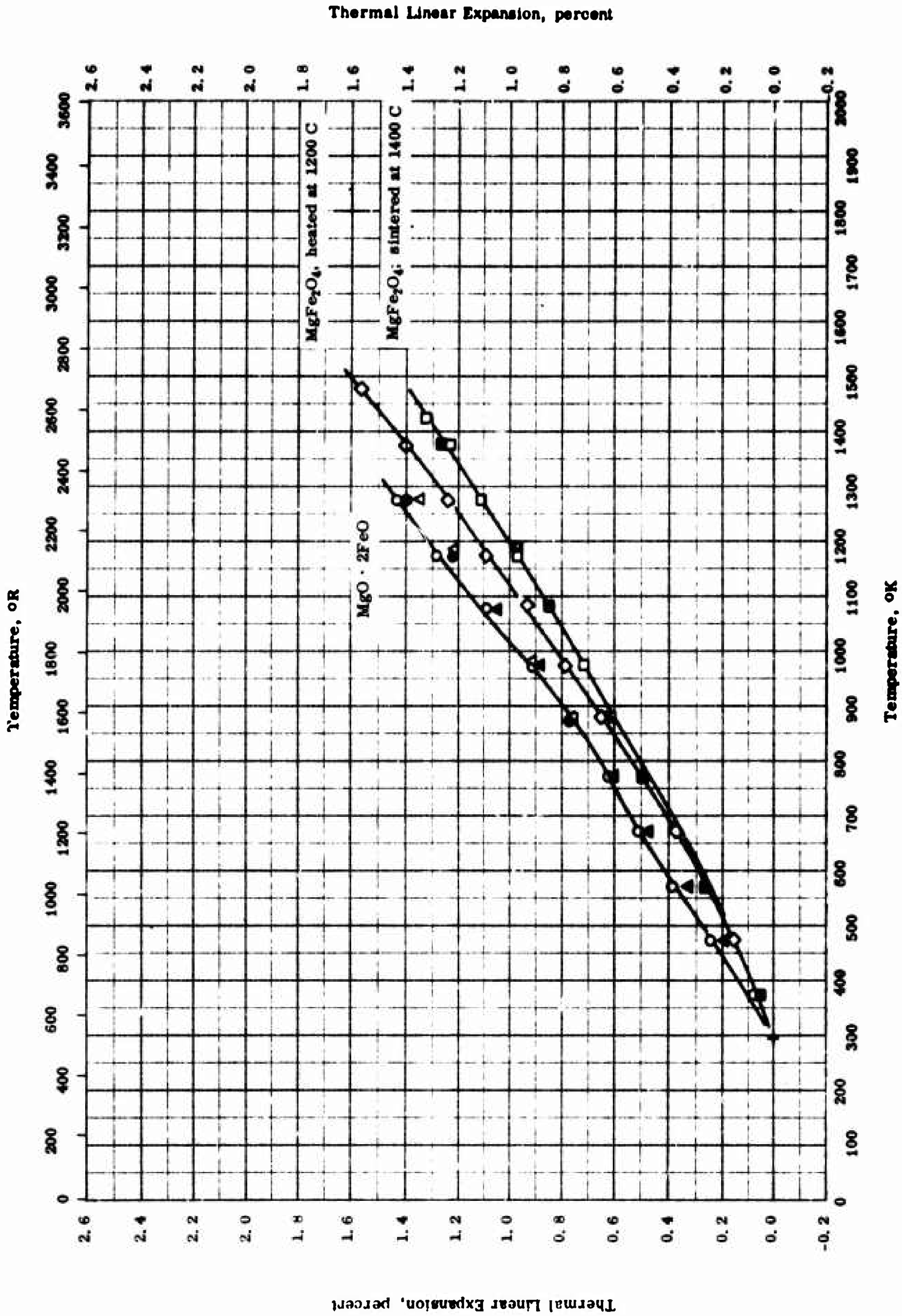


SPECIFIC HEAT -- MAGNESIUM FERRITE

SPECIFIC HEAT -- MAGNESIUM FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	54-29	298-1800		$MgFe_2O_4$; 79.74 Fe_2O_3, 20.22 MgO, and 0.14 SiO_2.	Prepared from reagent grade Fe_2O_3 and MgO; heated repeatedly 900 - 1300 C; material analyzed and composition adjusted between heats.



THERMAL LINEAR EXPANSION -- MAGNESIUM FERRITES

THERMAL LINEAR EXPANSION -- MAGNESIUM FERRITES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-21	298-1273		$MgO \cdot 2FeO$, magnesio-wüstite; prepared from calcined fluorescent-grade $MgCO_3$ and FeO.	$MgCO_3$ and FeO reacted for 16 hrs in a platinum boat at 1100 C in a H_2O: H ratio 3.1 atm, ground to -200 mesh, mixed with 2% Carbowax 4000, pressed, then sintered under same conditions used for calcination; measured in H_2O: H atm with H_2O : H ratio held at 0.32 up to 560 C and raised gradually up to 0.88 at 1100 C.
●	59-21	873-1273		Same as above.	Cooling cycle for above sample.
△	59-21	298-1273		Same as above.	Second heating cycle for above sample.
▲	59-21	373-1273		Same as above.	Second cooling cycle for above sample.
□	59-21	298-1430		$MgFe_2O_4$; prepared from 99.7 pure Fe_2O_3 and fluorescent-grade $MgCO_3$; grain size -200 mesh; dimensions 1/8 in. in diameter by 2 in. long.	Fe_2O_3 and $MgCO_3$ mixed with 5% Carbowax 4000, damp extruded into rod 1/8 in. in diameter, dried, and sintered at 1400 C in pure oxygen.
■	59-21	373-1430		Same as above.	Cooling cycle for above sample.
◇	46-5	293-1473		$MgFe_2O_4$; density 262 lb ft^{-3}.	MgO and Fe_2O_3 mixed, heated 2 hrs at 1200 C in air, crushed, and reheated.

PROPERTIES OF MANGANESE FERRITE

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density	4.7	293

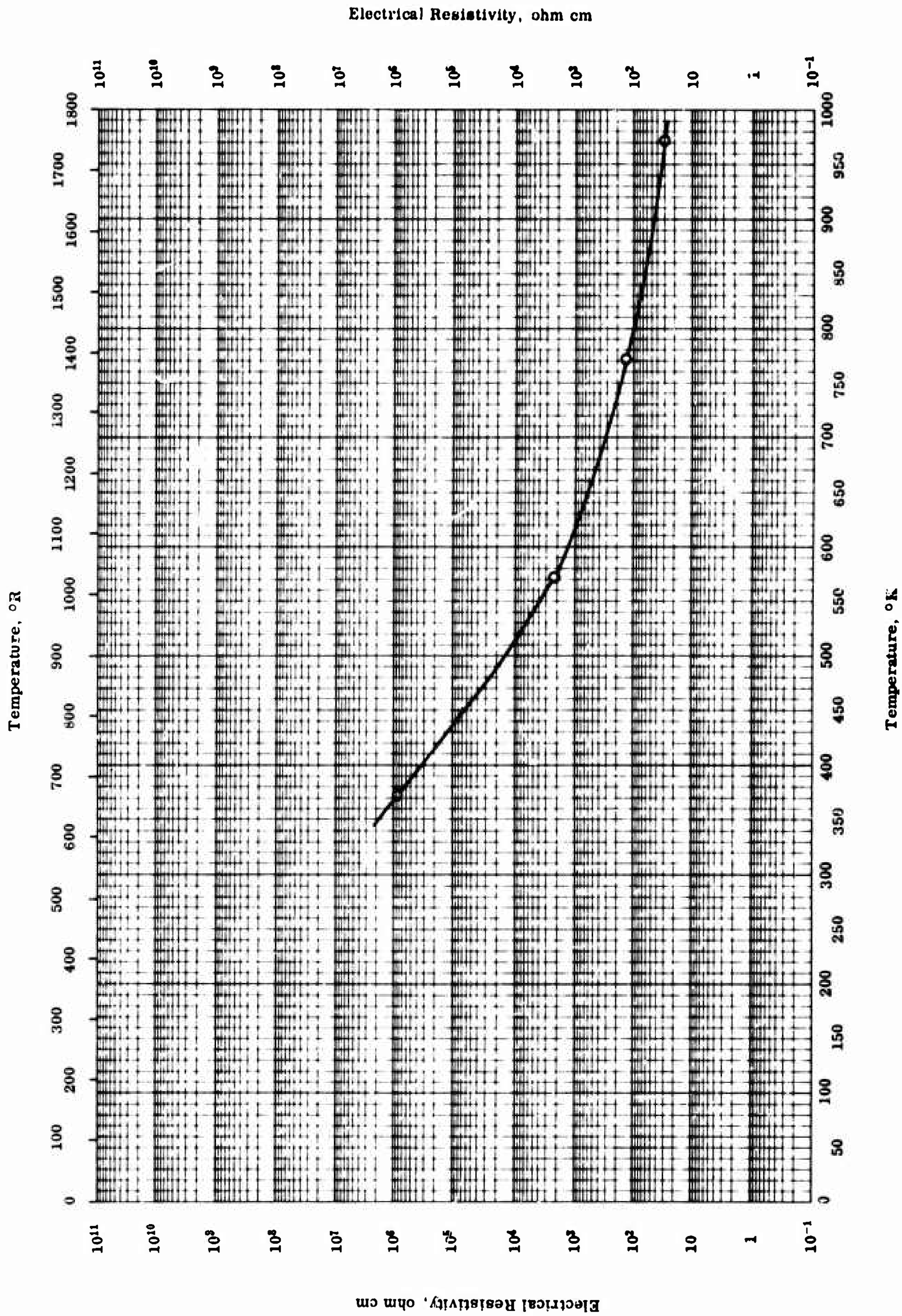
REPORTED VALUES

Density		g cm^{-3}	lb ft^{-3}
	○	4.67	291.4
	□	4.82	300.8
	△	4.66	290.8
	◇	4.69	292.7

PROPERTIES OF MANGANESE FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-30	298		Mn Fe_2O_4.	Mn CO_3 and iron oxide heated 6 hrs at 550 C and mixing and more heating to give final mixtures which were pressed and sintered and fired in stagnant air.
□	55-30	298		Mn Fe_2O_4 .	Same as above but fired in CO-CO_2.
△	55-30	298		Mn Fe_2O_4 .	Same as above except fired in CO_2.
◇	55-30	298		Mn Fe_2O_4.	Same as above except fired in He.

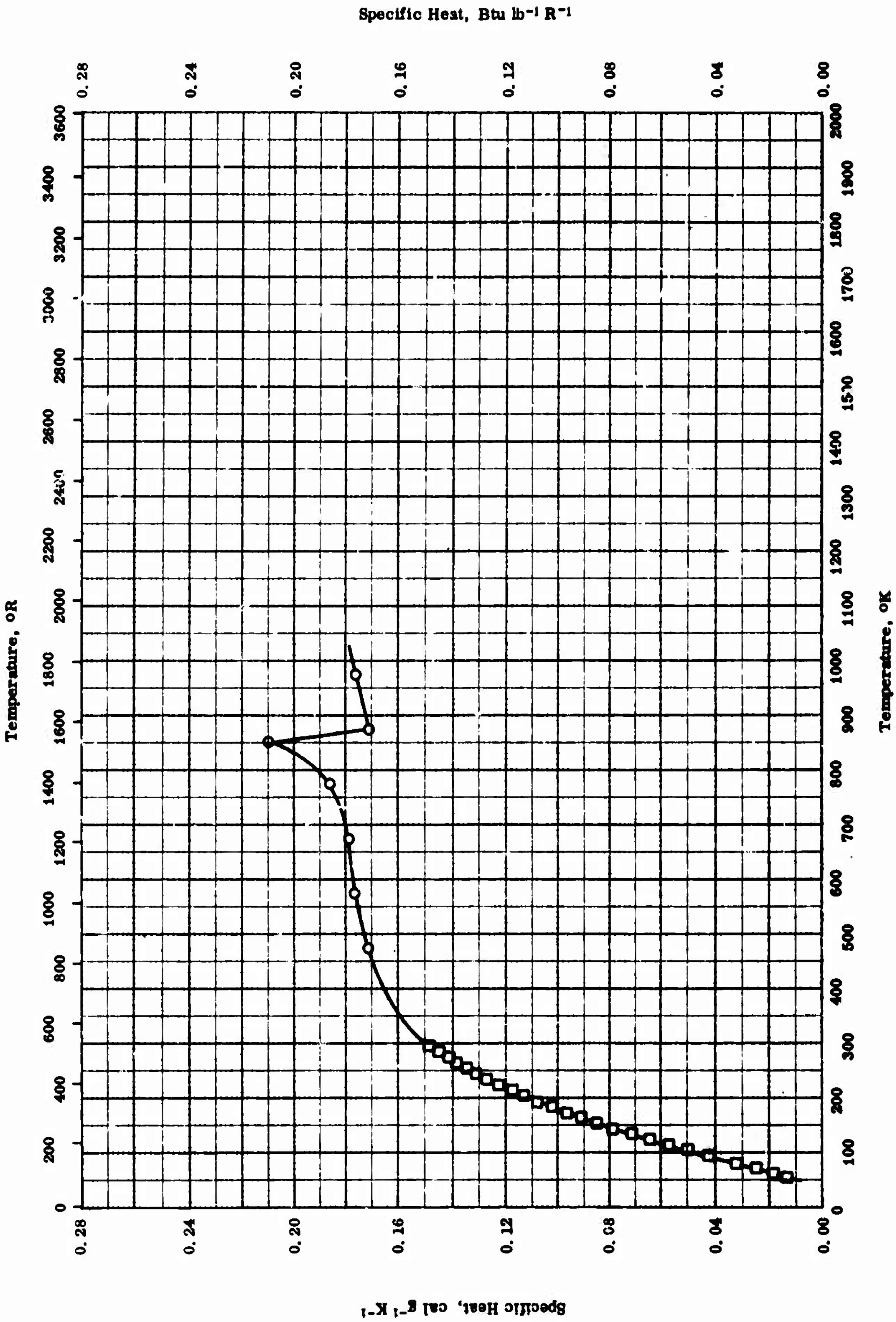


ELECTRICAL RESISTIVITY -- NICKEL FERRITE

ELECTRICAL RESISTIVITY -- NICKEL FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	51-12	373-973		$Fe_2O_3 \cdot NiO$.	Sintered discs.

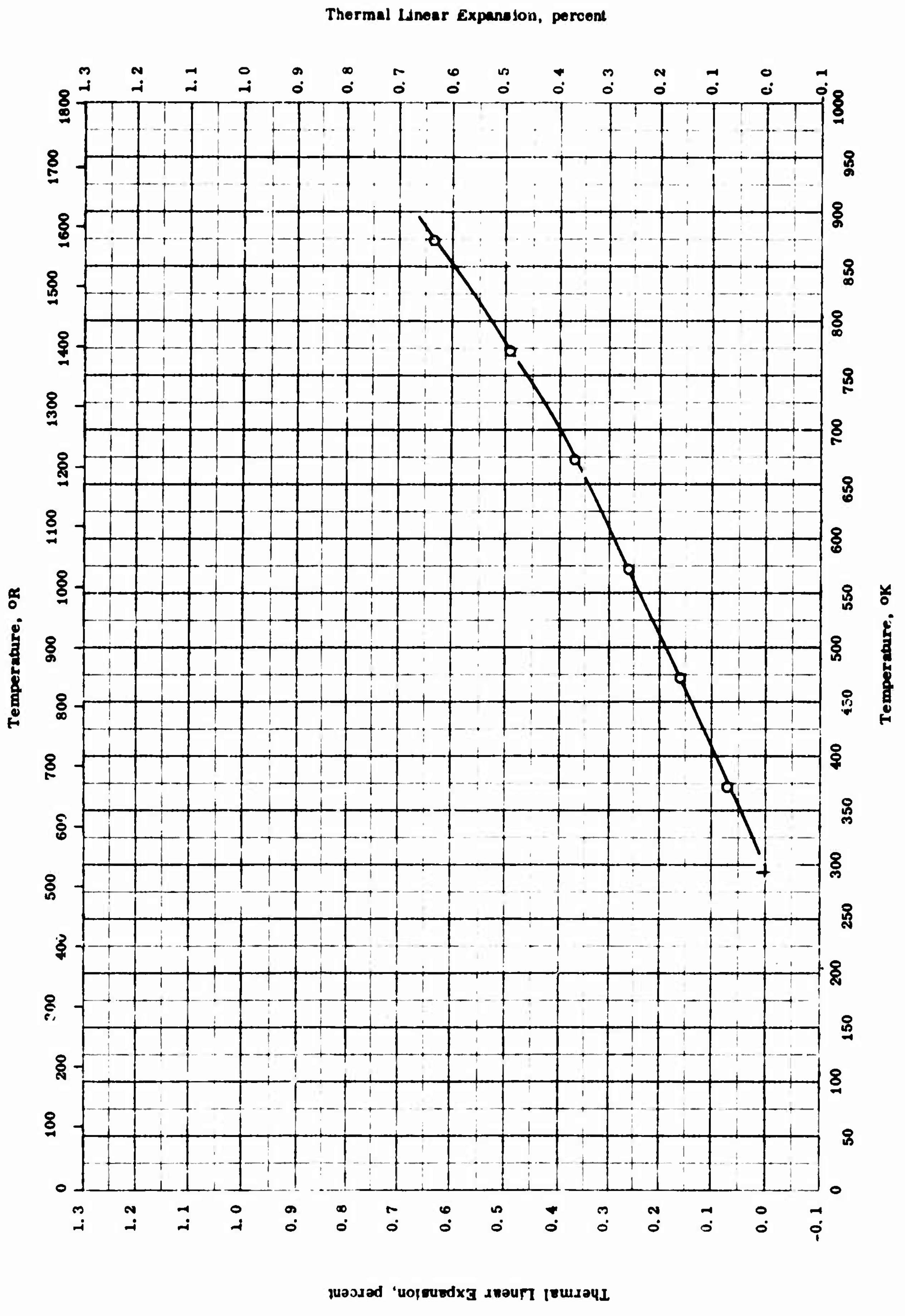


SPECIFIC HEAT -- NICKEL FERRITE

SPECIFIC HEAT -- NICKEL FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	51-21	473-973		$NiFe_2O_4$ ($NiO \cdot Fe_2O_3$).	
□	56-25	53-298		Spinel $NiFe_2O_4$ ($NiO \cdot Fe_2O_3$); 68.11 Fe_2O_3, 31.86 NiO and 0.03 SiO_2.	Heated for prolonged periods to 990 - 1270 C, with grinding, mixing, etc., in between heats.

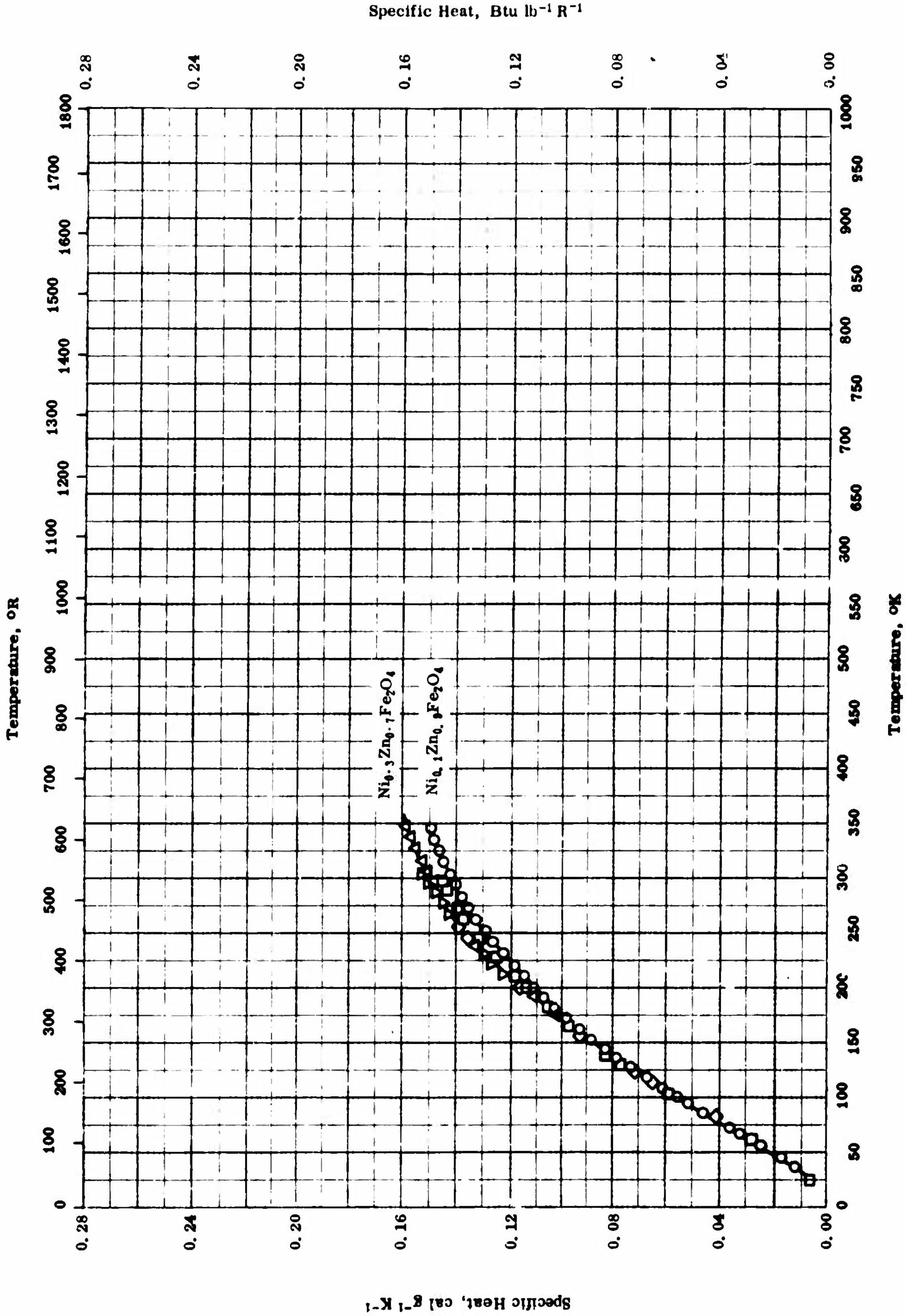


THERMAL LINEAR EXPANSION -- NICKEL FERRITE

THERMAL LINEAR EXPANSION -- NICKEL FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	56-29	373-873		$NiO \cdot Fe_2O_3$; 68.13 Fe_2O_3 and 31 NiO.	

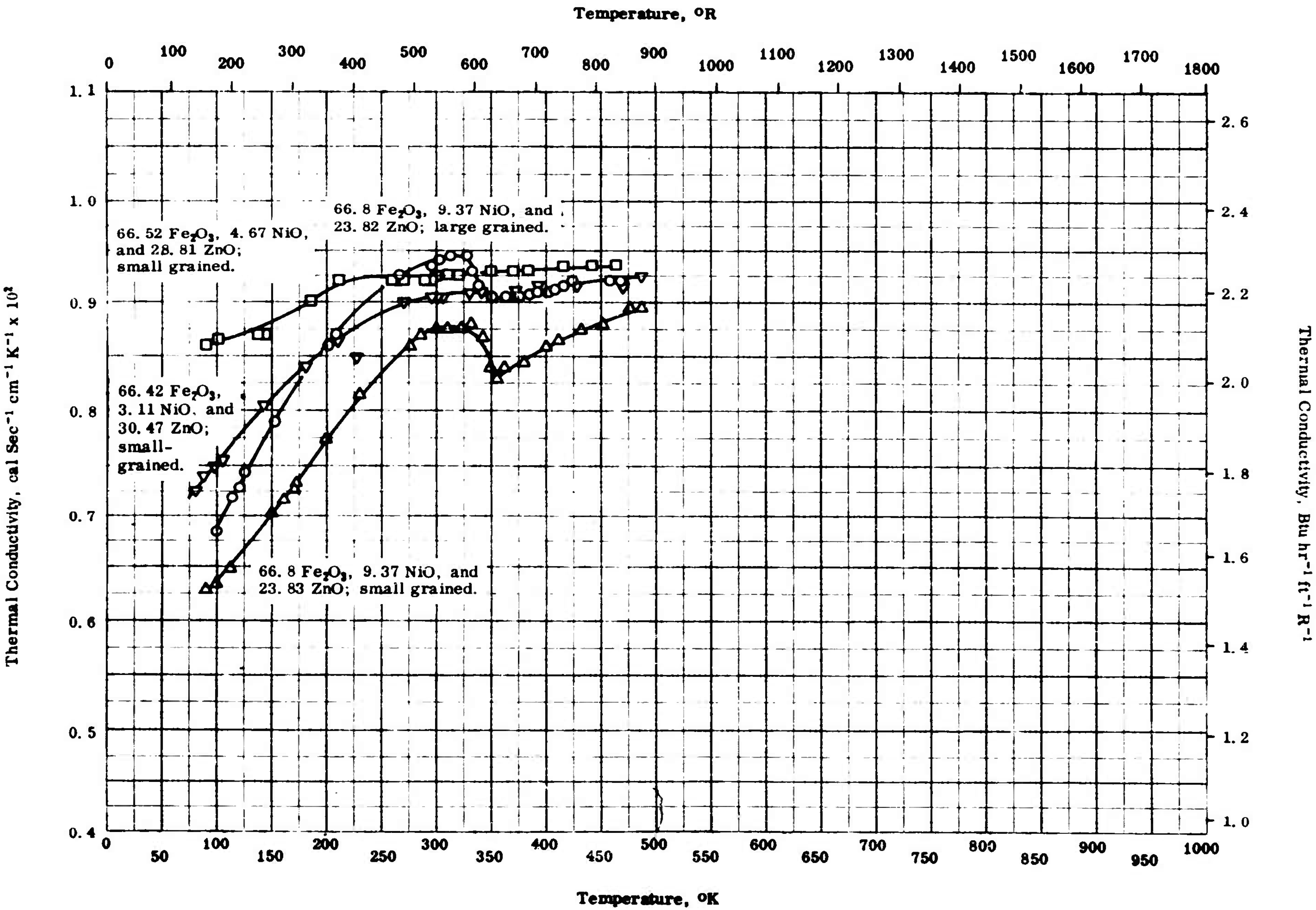


SPECIFIC HEAT -- NICKEL ZINC FERRITE

SPECIFIC HEAT -- NICKEL ZINC FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-29	6-346		$Ni_{0.1}Zn_{0.9}Fe_2O_4$; very pure and carefully prepared.	Annealed at 1200 C.
□	57-29	5-298		$Ni_{0.2}Zn_{0.8}Fe_2O_4$; 46.7 ±0.1 Fe.	Same as above.
△	57-29	6-246		$Ni_{0.3}Zn_{0.7}Fe_2O_4$.	Annealed at 1200 C.
▽	57-29	5-301		$Ni_{0.4}Zn_{0.6}Fe_2O_4$; 46.8 ±0.1 Fe.	Annealed at 900 C.
◇	57-29	6-306		Ferramic E, $Ni_{0.4}Zn_{0.6}Fe_2O_4$; commercial grade.	

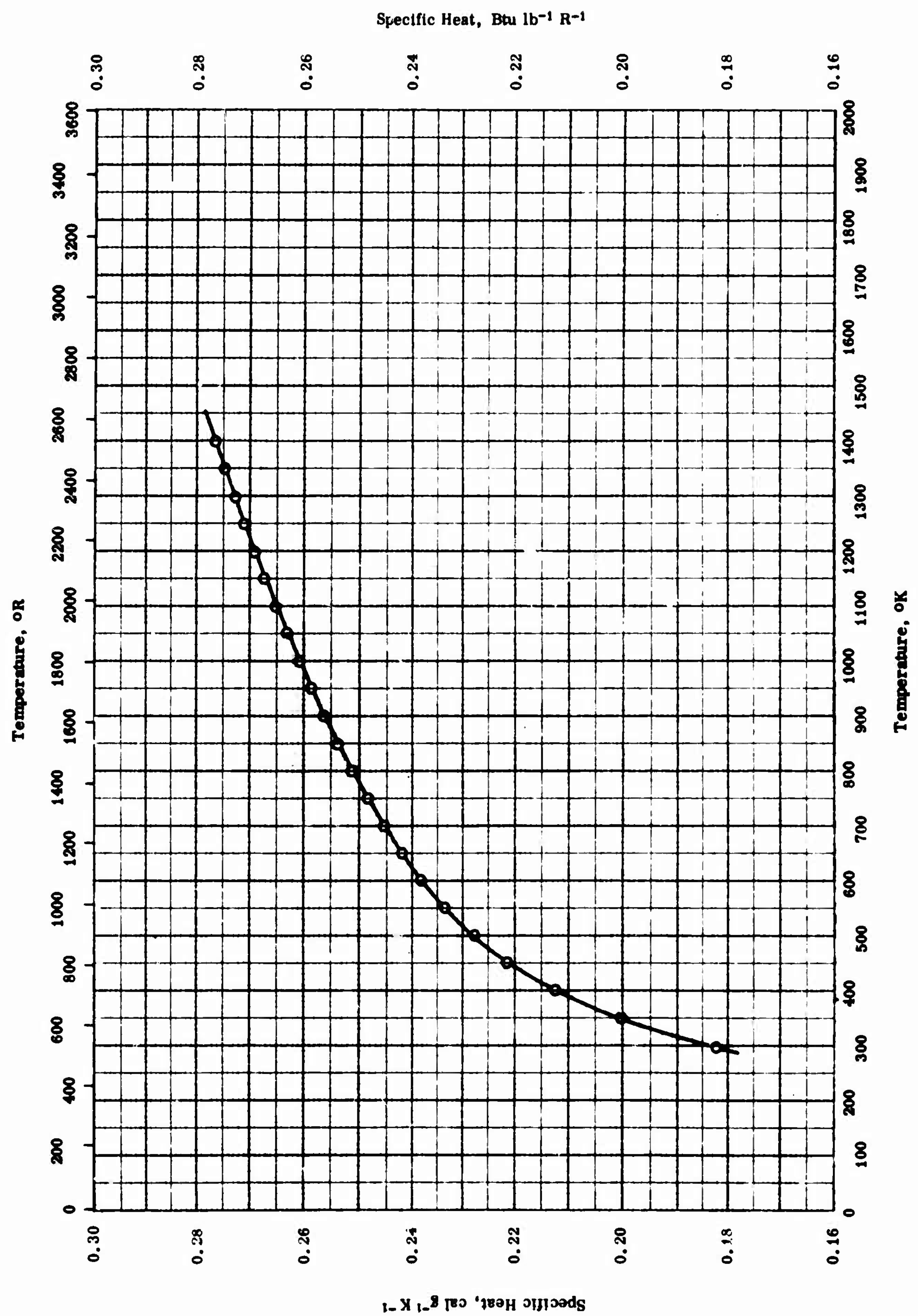


THERMAL CONDUCTIVITY -- NICKEL-ZINC FERRITE

THERMAL CONDUCTIVITY -- NICKEL-ZINC FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-7	100-468	1-3	Ni(Zn)Fe_2O_4; 66. 8 Fe_2O_3, 9. 37 NiO, and 23. 83 ZnO; large grain structure with density 5. 1 g cm^{-3}.	Ground, sifted and fired at 700 C, again sifted, and finally pressed at 1500-3000 Kg cm^{-2}; heated to 300-400 C for 3 hrs at a heating and cooling rate of 50 C per hr; measured in vacuum.
△	63-7	90-487	1-3	Same as above; small grain with density 4. 3 g cm^{-3}.	Same as above.
▽	63-7	80-487	1-3	66. 52 Fe_2O_3, 4. 67 NiO, and 28. 81 ZnO; same as the above sample.	Same as above.
□	63-7	90-463	1-3	66. 42 Fe_2O_3, 3. 11 NiO, and 30. 47 ZnO; same as above.	Same as above.

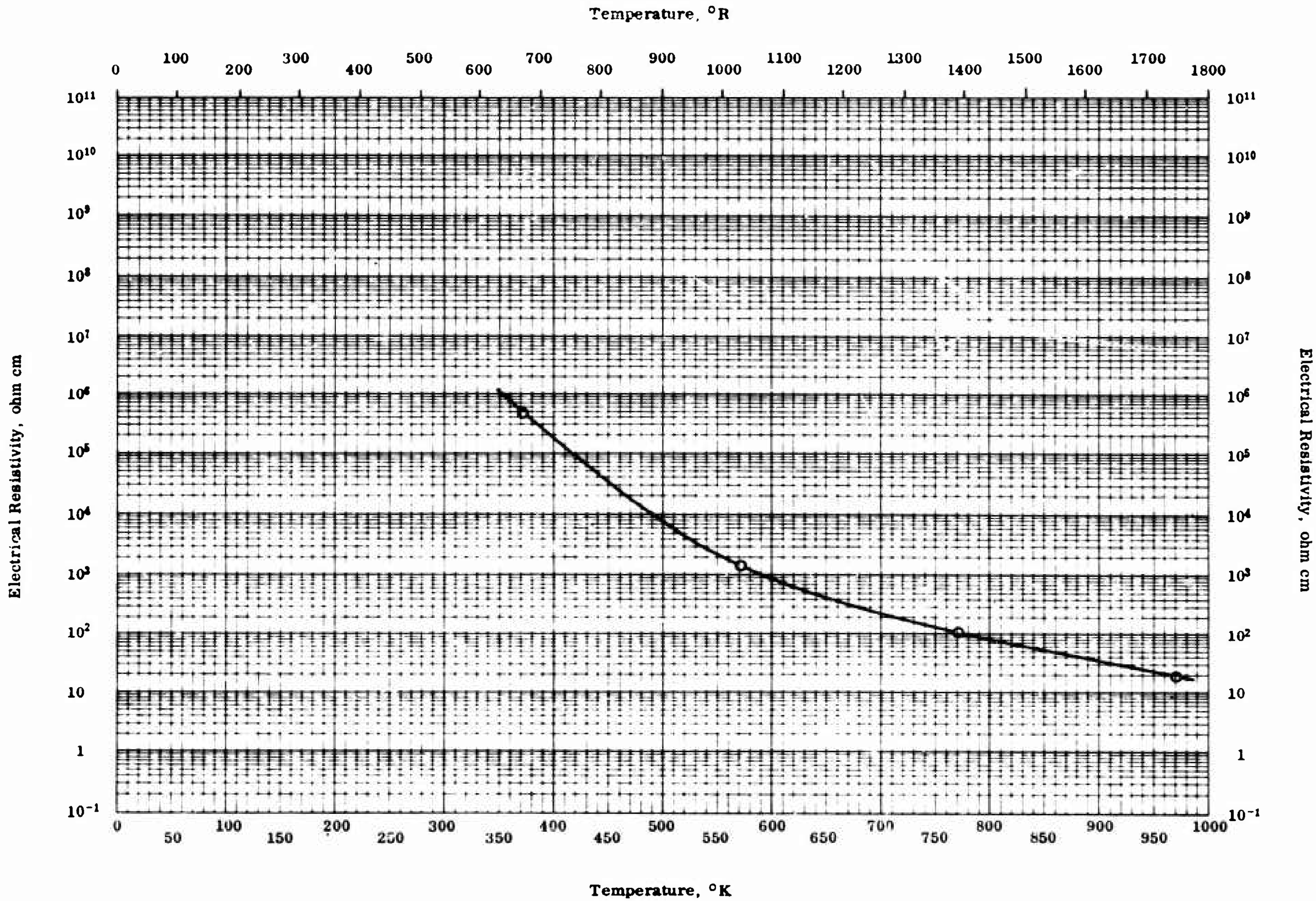


SPECIFIC HEAT -- SODIUM FERRITE

SPECIFIC HEAT -- SODIUM FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-19	300-1400	0.3	98.6 $NaFeO_2$.	Under argon atm.

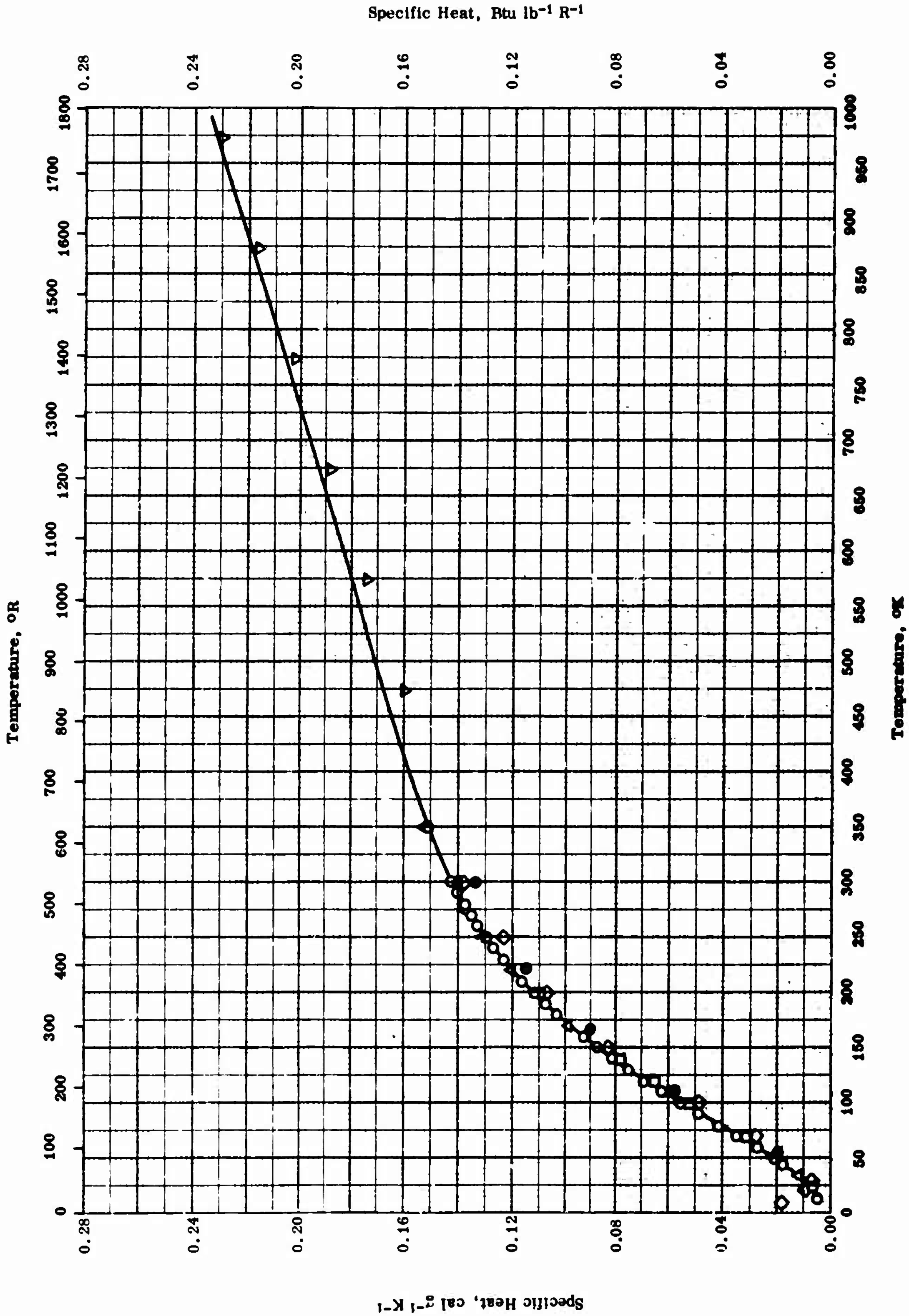


ELECTRICAL RESISTIVITY -- ZINC FERRITE

ELECTRICAL RESISTIVITY -- ZINC FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	51-12	373-973		$Fe_2O_3 \cdot ZnO$.	Sintered discs.

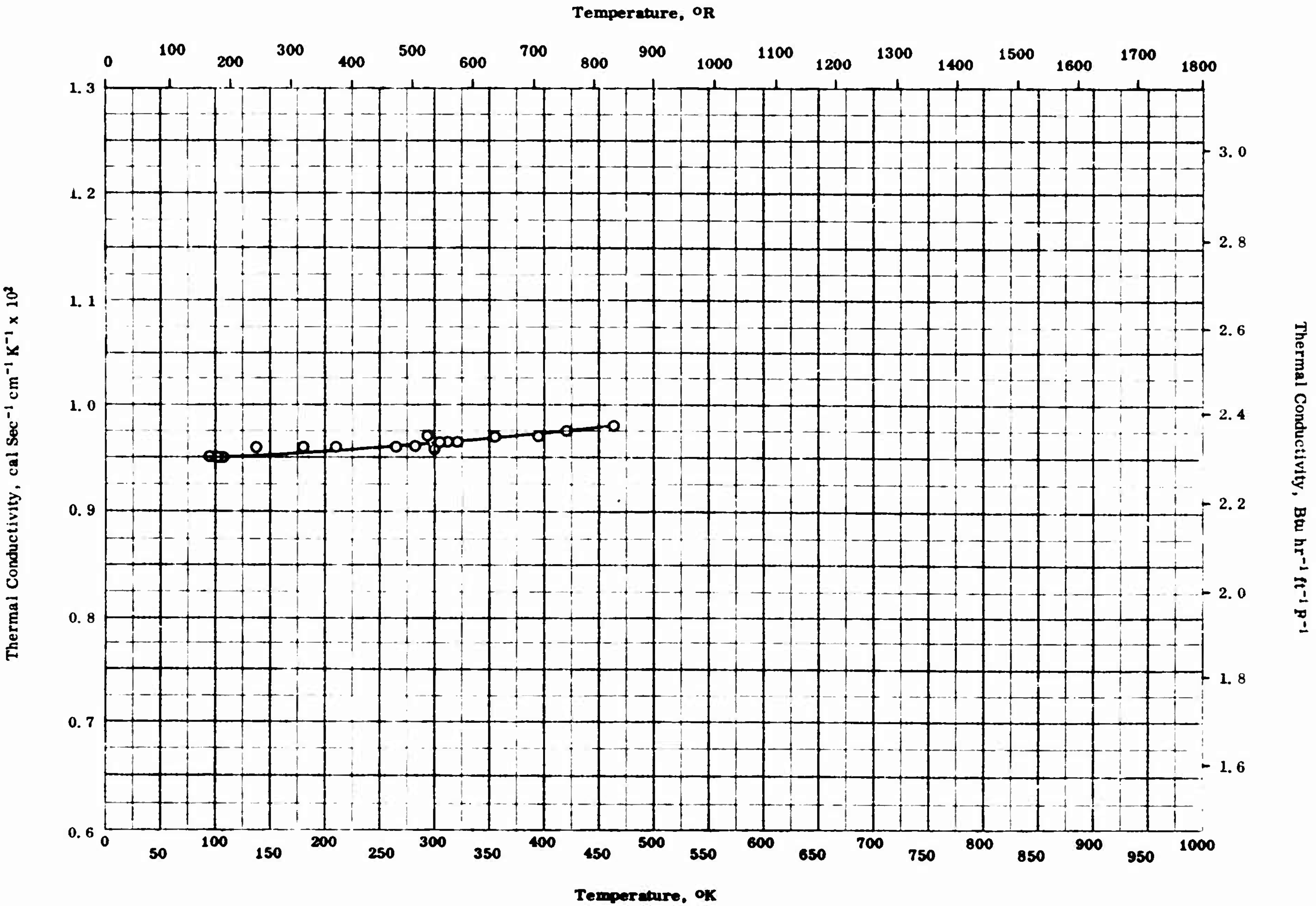


SPECIFIC HEAT -- ZINC FERRITE

SPECIFIC HEAT -- ZINC FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-18	5-350		$ZnFe_2O_4$; 46.0 Fe and 27.0 Zn.	
□	58-18	5-350		$Li_{0.05}Zn_{0.9}Fe_{2.05}O_4$; 48.0 Fe, 24.4 Zn, and 0.12 Li.	Annealed.
△	58-18	5-350		$Li_{0.05}Zn_{0.9}Fe_{2.05}O_4$; 47.9 Fe, 24.4 Zn, and 0.11 Li.	Quenched.
◇	57-29	9-350		$ZnFe_2O_4$; 46.24 Fe, 27.2 Zn, < 0.1 Fe (ferrous), 0.01 - 0.1 each Al, Mn, and 0.001 - 0.01 each Ca, Cu, Mg, Ni and S.	Pressed; fired 14 hrs at 1100 C in air; fragmented to pass 30-mesh screen, reformed into slugs, fired 12 hrs at 1100 C, and furnace cooled in 16 hrs.
▽	51-21	473-973		$ZnFe_2O_4$.	
●	56-25	53-298		Spinel, $ZnFe_2O_4$; 66.36 Fe_2O_3 and 33.89 ZnO.	Heated several times to 940 - 1280 C for a total of 18 days with grinding, mixing, etc., in between heatings.

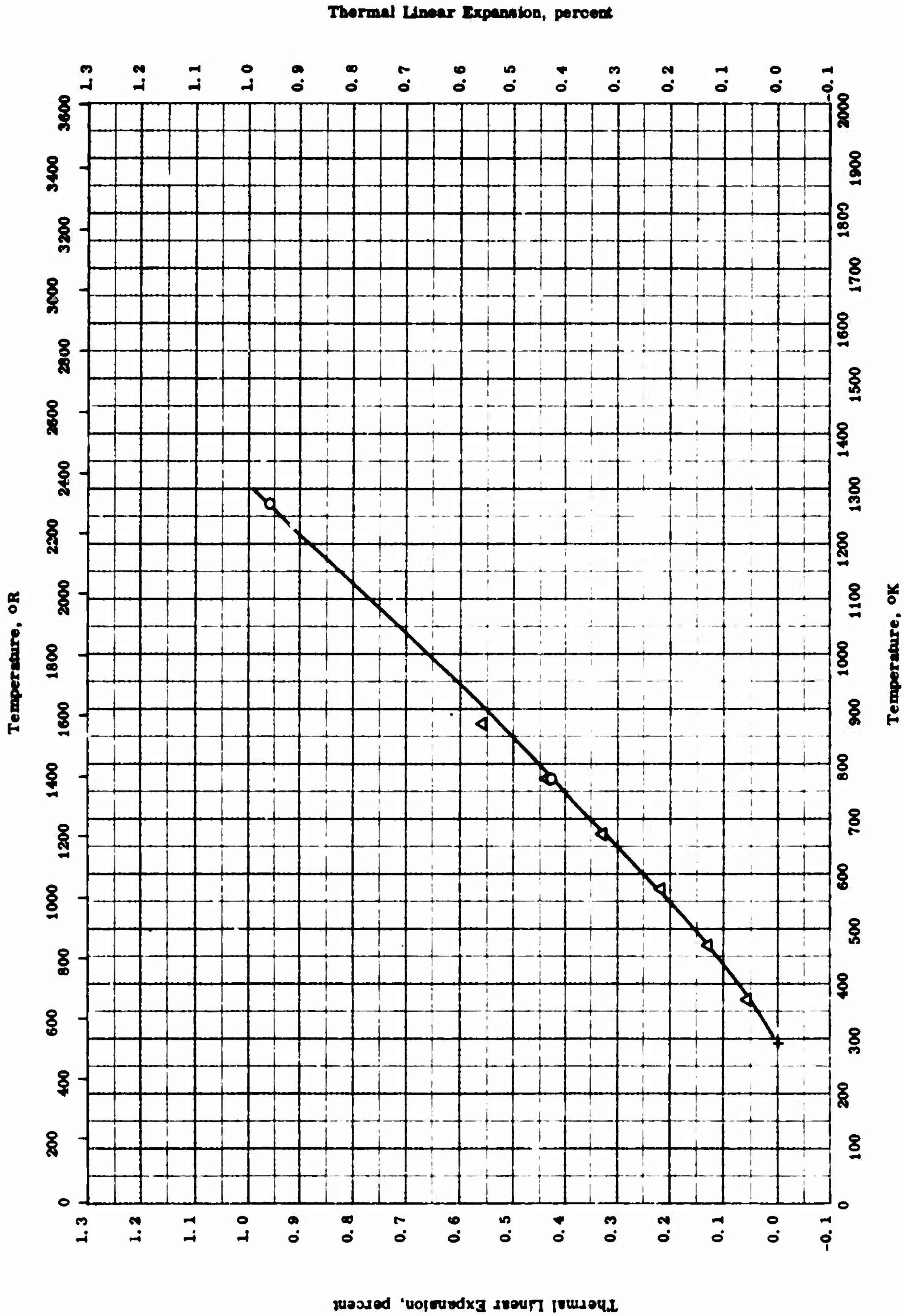


THERMAL CONDUCTIVITY -- ZINC FERRITE

THERMAL CONDUCTIVITY -- ZINC FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	63-7	95-463	1-3	Zn Fe_2O_4; 66.24 analytically pure Fe_2O_3 and 33.76 ZnO.	Prepared by pressing sifted and fired powder at 1500-3000 Kg cm^{-2}; heated at 300-400 C for 3 hrs and finally fired at 1300 C for 3 hrs at a heating and cooling rate of 50 C per hr; measured in a vacuum of 10^{-4} to 10^{-5} mm Hg.



THERMAL LINEAR EXPANSION -- ZINC FERRITE

THERMAL LINEAR EXPANSION -- ZINC FERRITE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-35	298-1273		$ZnO \cdot Fe_2O_3$.	
△	56-29	293-[illegible]73		$ZnO \cdot Fe_2O_3$; 66. 2 Fe_2O_3 and 33. 8 ZnO.	

PROPERTIES OF CALCIUM HAFNATE

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density	6.5	410
Melting Point	2743	4938

REPORTED VALUES

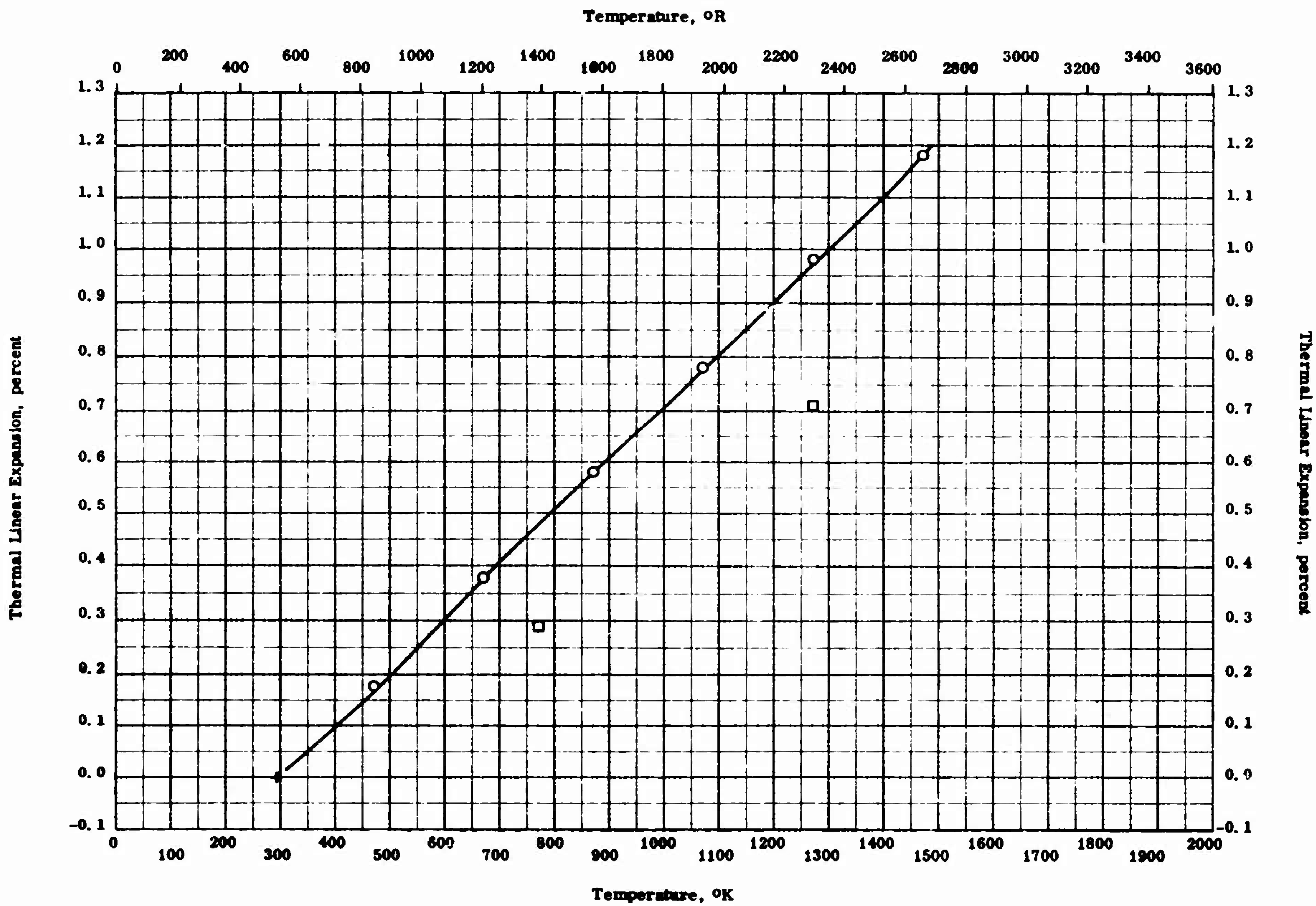
		$g\ cm^{-3}$	$lb\ ft^{-3}$
Density			
	○	5.73	358

		K	R
Melting Point			
	□	2743 ± 20	4938 ± 36

PROPERTIES OF CALCIUM HAFNATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-18	298		$CaO \cdot HfO_2$; orthorhombic crystal structure; porosity 12.3%.	Equimolar mixture of CaO and HfO_2, calcined 2 hrs at 1550 C, reground to 200 mesh, pressed with 5% water and 2% dextrin; fired 2 hrs at 1550 C, and cooled slowly.
□	54-18	2723-2763		Same as above.	Same as above.

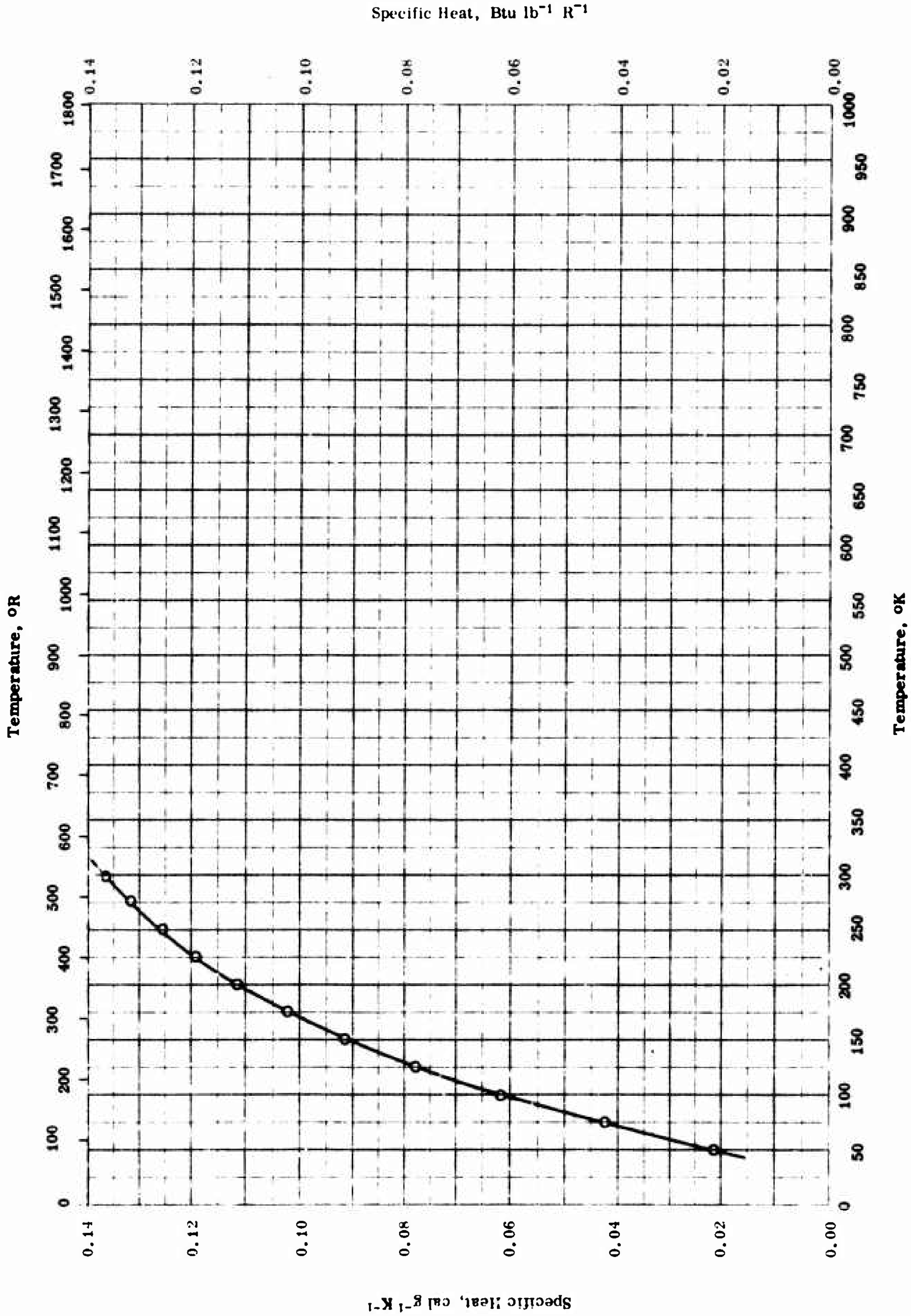


THERMAL LINEAR EXPANSION -- CALCIUM HAFNATE

THERMAL LINEAR EXPANSION -- CALCIUM HAFNATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	60-35	298-1273		$CaO \cdot HfO_2$.	
○	54-32	293-1473		$CaHfO_3$; density 358 lb ft^{-3}.	

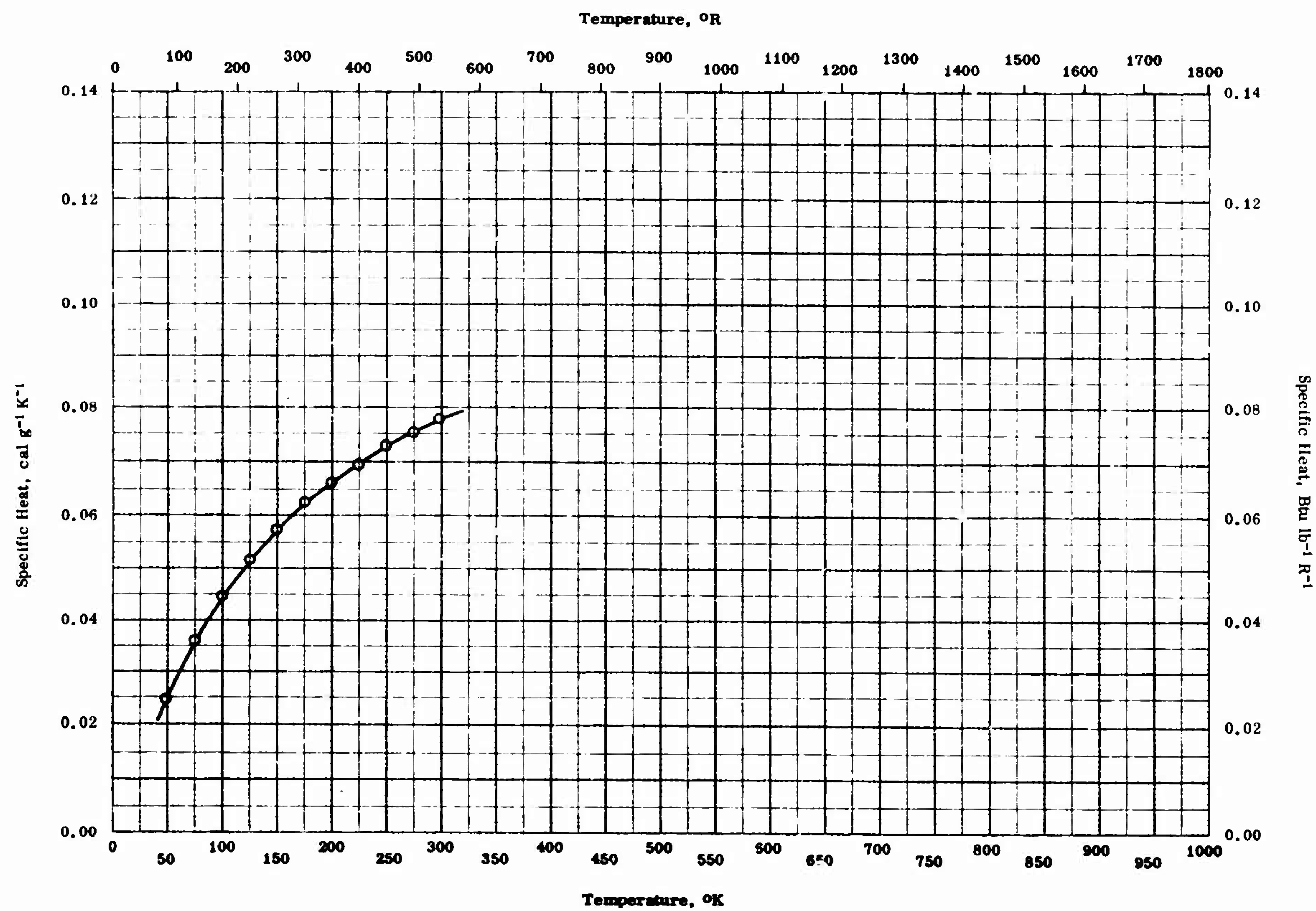


SPECIFIC HEAT -- CALCIUM MOLYBDATE

SPECIFIC HEAT -- CALCIUM MOLYBDATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	63-32	50-298	0.3	$CaO \cdot MoO_3$; 71.98 MoO_3 and 28.08 CaO.	Prepared from stoichiometric mixture of reagent grade $CaCO_3$ and MoO_3 by heating 9 days at 500 - 570 C followed by heating 10 days at 600 - 690 C.

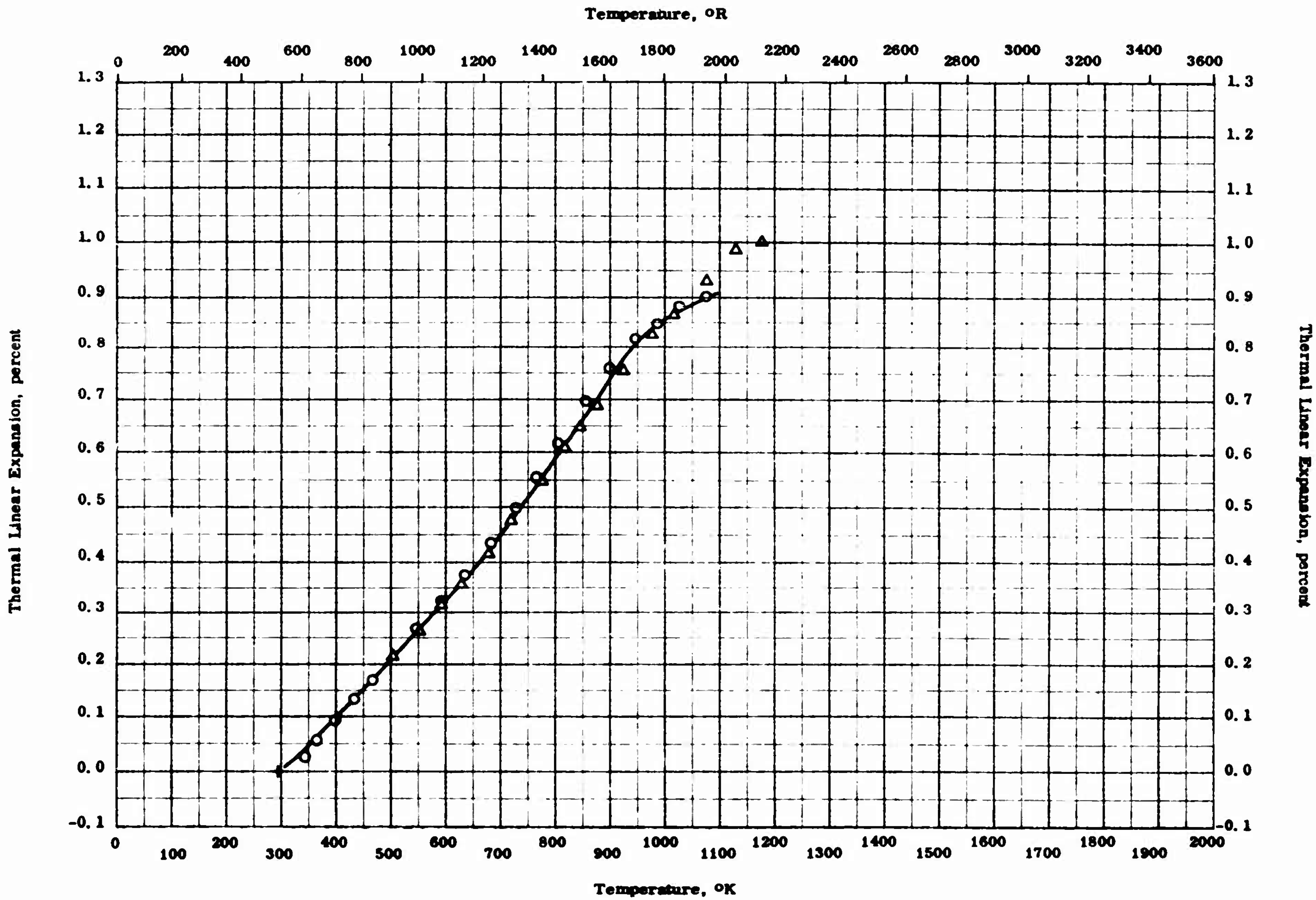


SPECIFIC HEAT -- LEAD MOLYBDATE

SPECIFIC HEAT -- LEAD MOLYBDATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	64-15	50-298	0.3	$PbO_2 \cdot MoO_2$; 60.70 PbO_2 and 39.17 MoO_2.	Prepared from reagent grade lead nitrate and ammonium molybdate, dried at 500 C and ground to -80 mesh and then dried at 640.

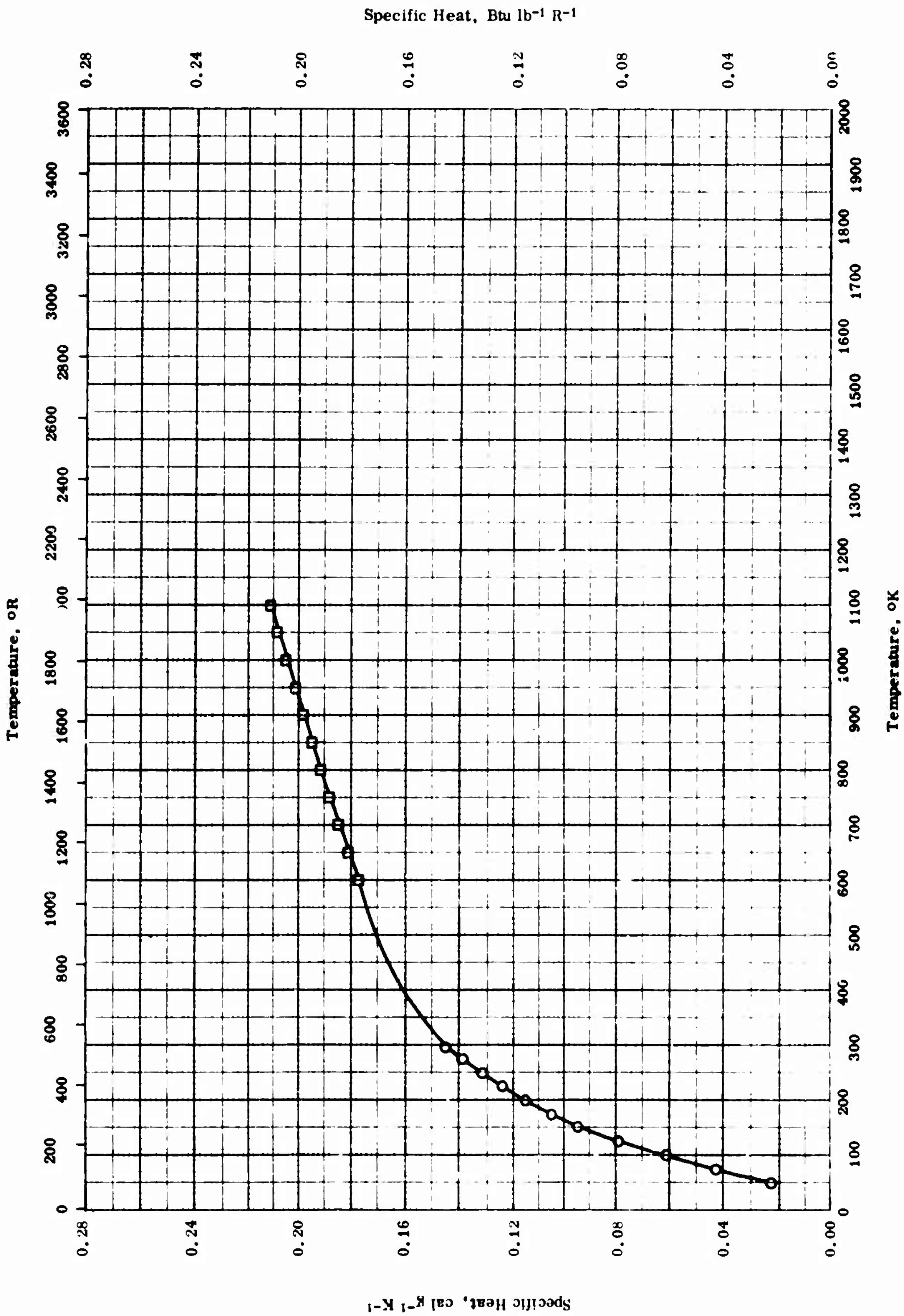


THERMAL LINEAR EXPANSION -- LEAD MOLYBDATE

THERMAL LINEAR EXPANSION -- LEAD MOLYBDATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-38	298-1075		$PbO \cdot MoO_3$; calculated composition 60.79 PbO and 39.21 MoO_3; prepared from c.p. chemicals; original length 105.6 mm.	Hand-mixed with acetone for 15 to 20 min, air dried, heated slowly to 300 C for 4 hrs, remixed calcined at 850 C for 24 hrs, cooled, remixed, re-calcined at 1050 C for 24 hrs, ground, mixed with carbowax solution, nodulized through a 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and fired slowly to 1050 C for 6 hrs; measured with heating rate of 120 C hr^{-1}.
△	63-38	298-1174		Same as above.	Second run for above sample.

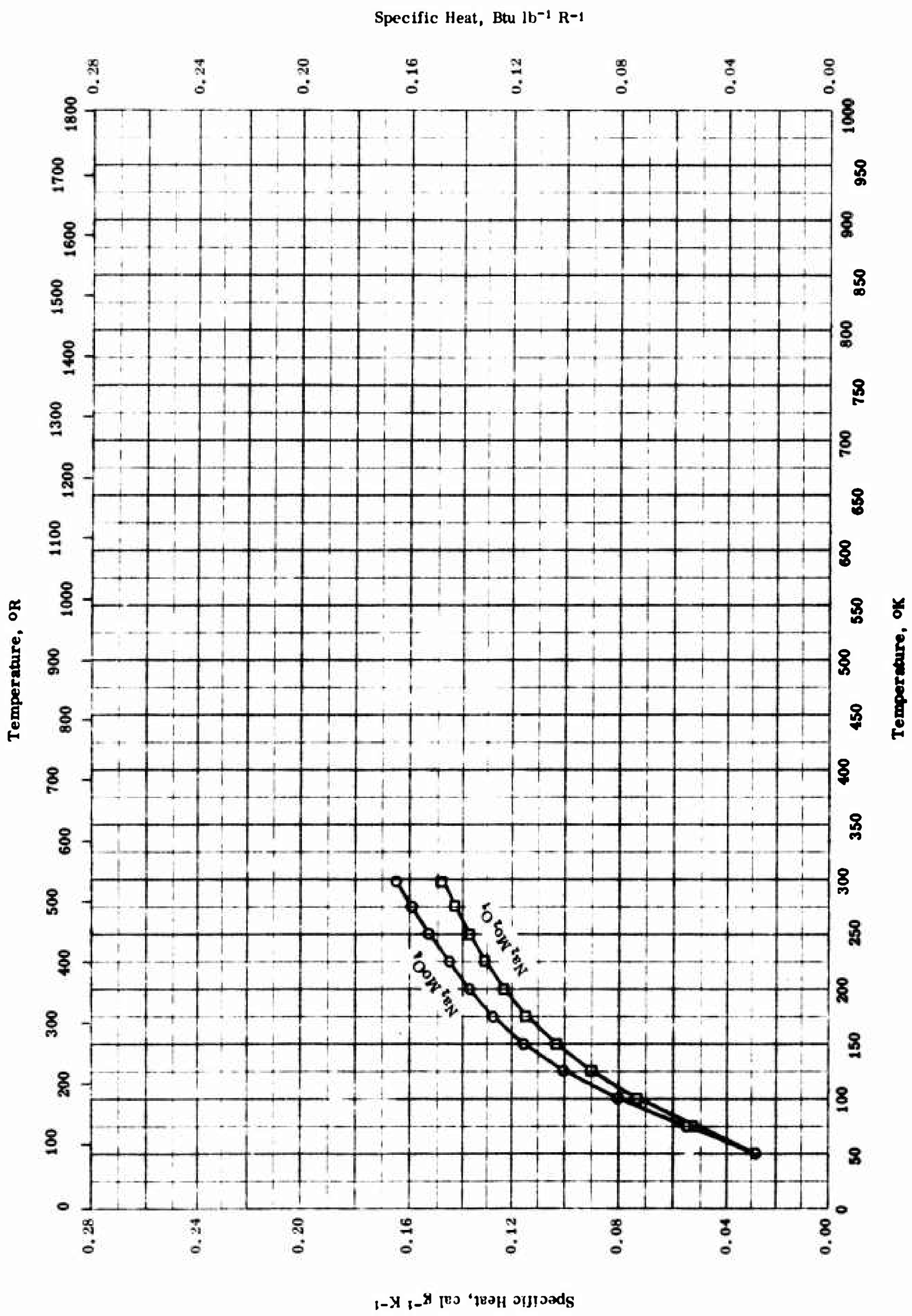


SPECIFIC HEAT -- MAGNESIUM MOLYBDATE

SPECIFIC HEAT -- MAGNESIUM MOLYBDATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-32	50-298	0.30	$MgO \cdot MoO_3$; 78.21 MoO_3 and 21.95 MgO.	Prepared by dissolving stoichiometric amounts of reagent grade MgO and MoO_3 in boiling water; heated to dryness at 122 C; heated at 870 - 890 for 20 hrs.
□	61-36	600-1100	±0.1	$MgO \cdot MoO_3$.	



SPECIFIC HEAT -- SODIUM MOLYBDATES

SPECIFIC HEAT -- SODIUM MOLYBDATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-32	50-298	0.3	Sodium monomolybdate, $Na_2O \cdot MoO_3$; 69.89 MoO_3.	
□	63-31	50-298	0.3	Sodium dimolybdate, $Na_2O \cdot 2MoO_3$; 82.29 MoO_3.	

PROPERTIES OF ALUMINUM NIOBATE

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Melting Point	1823 ± 20	3282 ± 36

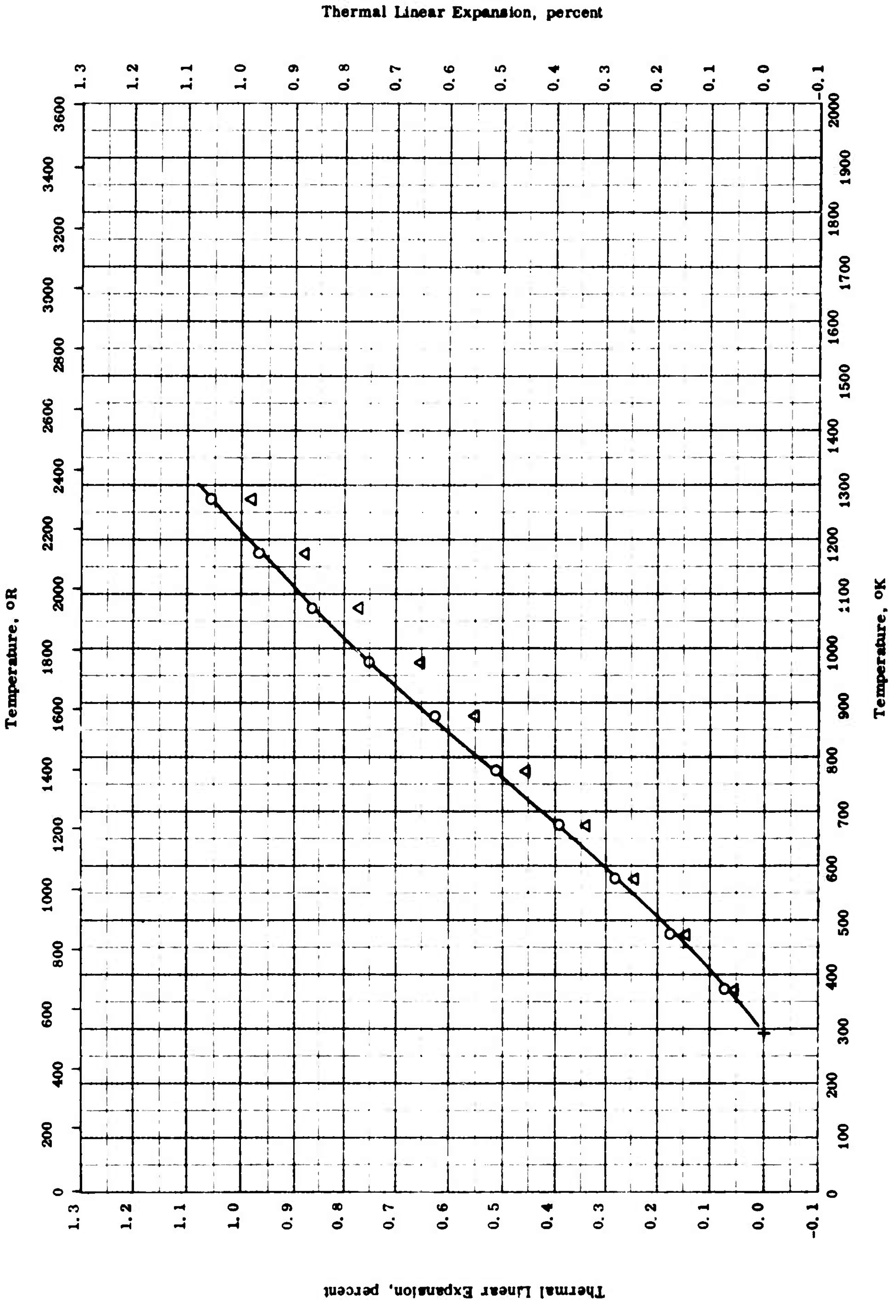
REPORTED VALUES

Melting Point		K	R
	O	1823 ± 20	3282 ± 36

PROPERTIES OF ALUMINUM NIOBATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	62-21	1803-1843		$Al_2O_3 \cdot Nb_2O_5$.	

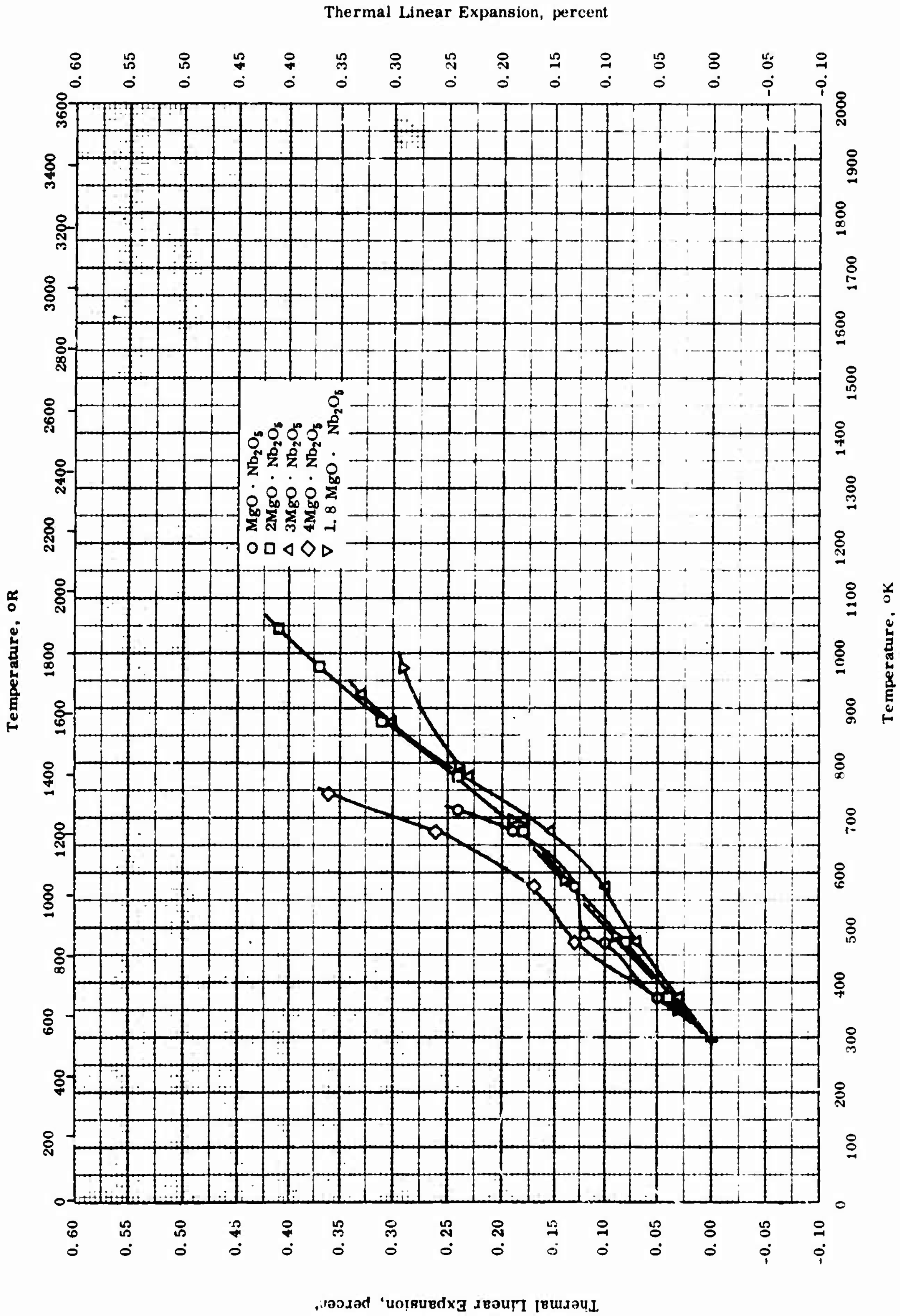


THERMAL LINEAR EXPANSION -- DYSPROSIUM NIOBATE

THERMAL LINEAR EXPANSION -- DYSPROSIUM NIOBATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-38	303-1273		$Dy_2O_3 \cdot Nb_2O_5$; 58.3 Dy_2O_3 and 41.7 Nb_2O_5; density 5.493 g cm^{-3}; melting point 1950 ±20 C.	Wet ball milled with flint pebbles for 2 hrs, dry pressed at 20,000 psi with 2% soluble wax emulsion into 1/2 in. diameter by 1 in. long pellets, and fired in air atm.
△	60-38	303-1273		Same as above.	Same as above.

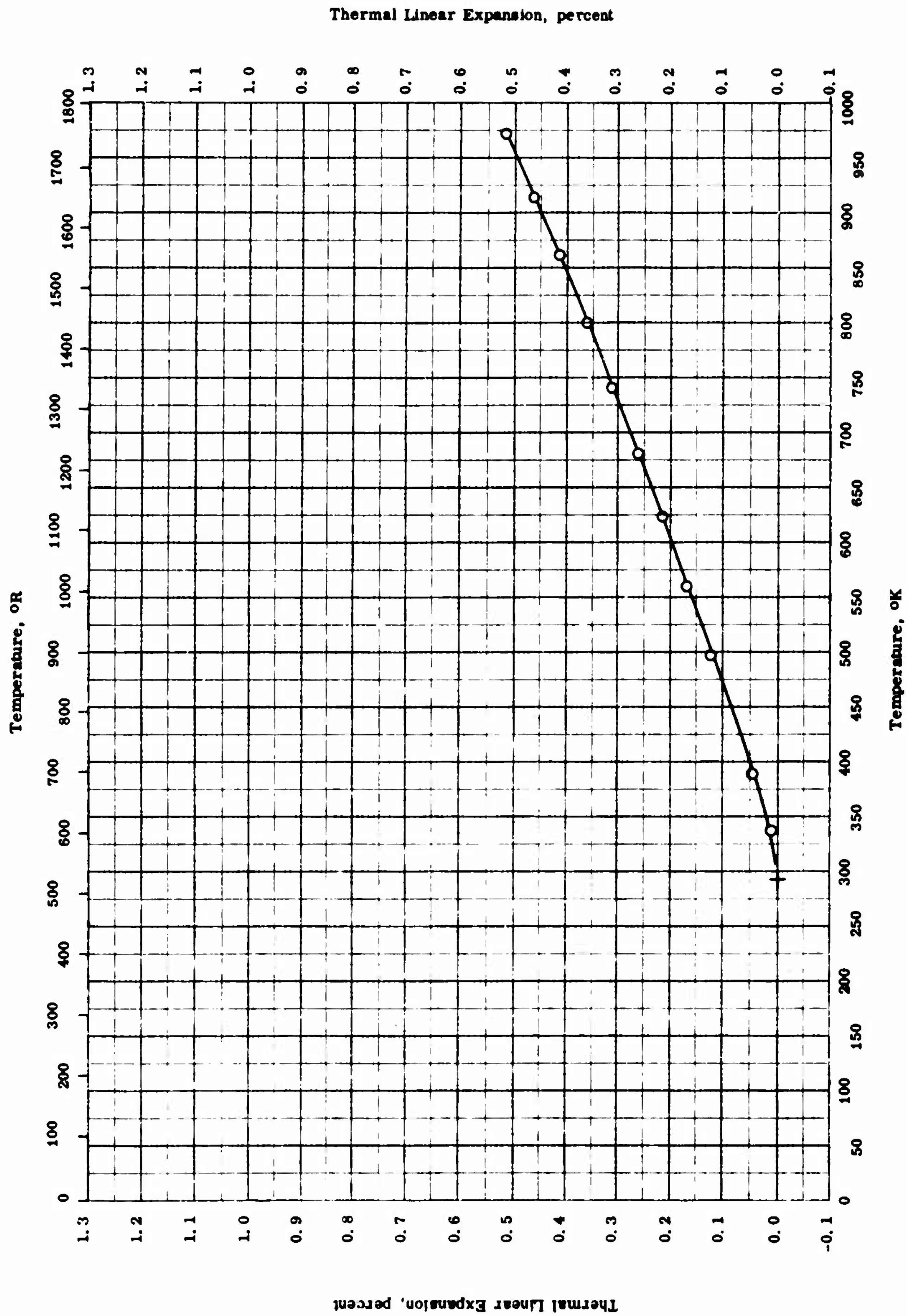


THERMAL LINEAR EXPANSION -- MAGNESIUM NIOBATES

THERMAL LINEAR EXPANSION -- MAGNESIUM NIOBATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-12	293-713		$MgO \cdot Nb_2O_5$; 86.8 Nb_2O_5 and 13.2 MgO.	Fired 2 hrs at 1450 C and cooled in 24 hrs.
□	52-12	293-1043		$2MgO \cdot Nb_2O_5$; 76.7 Nb_2O_5 and 23.3 MgO.	Fired 2 hrs at 1500 C and cooled in 24 hrs.
△	52-12	293-923		$3MgO \cdot Nb_2O_5$; 68.7 Nb_2O_5 and 31.3 MgO.	Same as above.
◇	52-12	293-743		$4MgO \cdot Nb_2O_5$; 62.2 Nb_2O_5 and 37.8 MgO.	Same as above.
▽	52-22	293-973		$MgO \cdot Nb_2O_5 + 2MgO \cdot Nb_2O_5$ in proportion of 1.8 MgO to 1 Nb_2O_5; 78.55 Nb_2O_5 and 21.45 MgO; prepared from c.p. raw materials.	Calcined 2 hrs at 1220 C and fired at 1495 C.

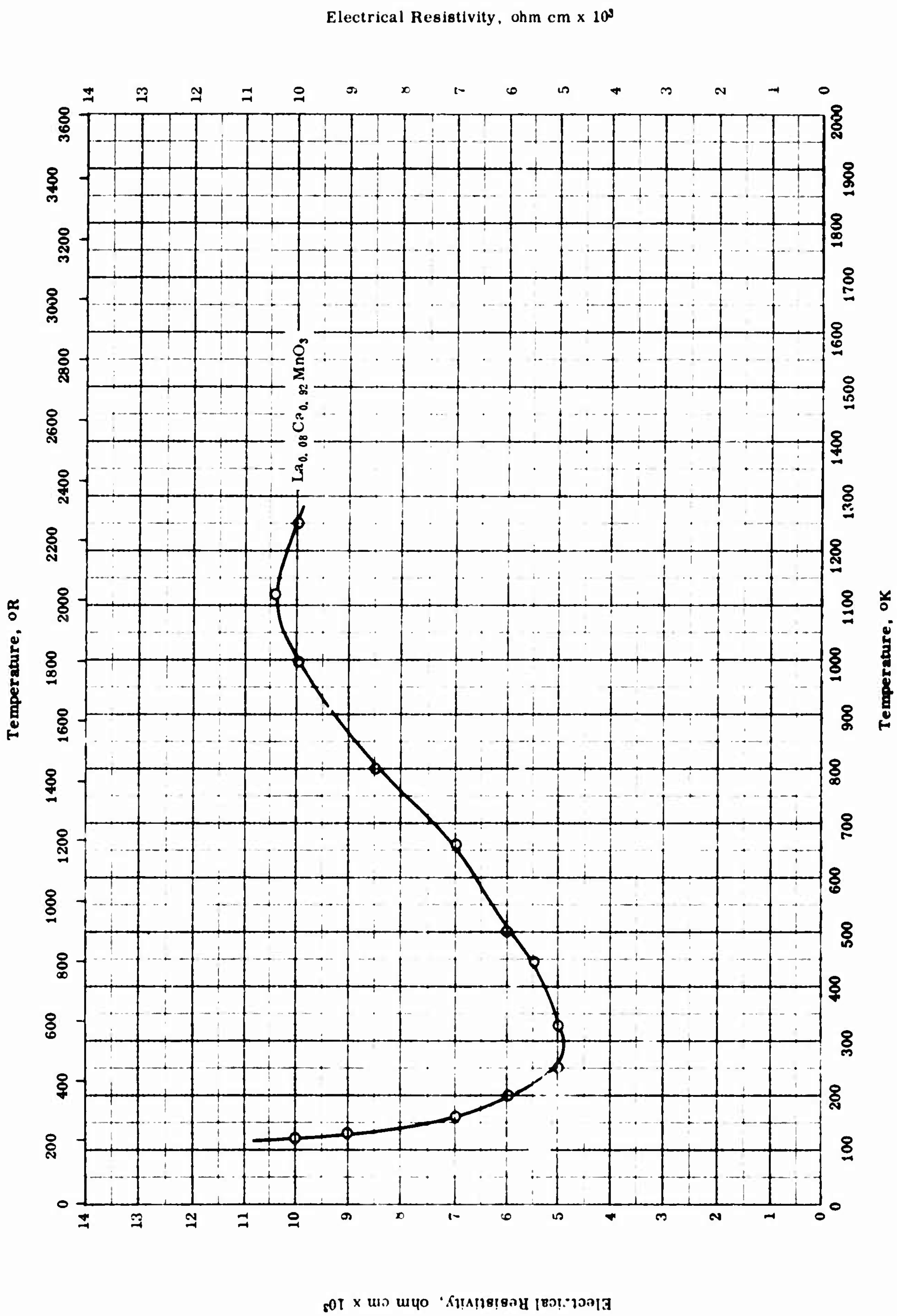


THERMAL LINEAR EXPANSION -- BARIUM TITANIUM GERMANIUM OXIDE

THERMAL LINEAR EXPANSION -- BARIUM TITANIUM GERMANIUM OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	62-29	298-972		$BaTiGe_3O_9$; prepared from Fisher-Certified reagent grade $BaCO_3$ and TiO_2 and Eagle-Picher Co. GeO_2; dimensions 1 by 1 by 10 cm.	Wet mixed under alcohol, sintered at 1180 C for about 15 hrs, mixed with Carbowax binder, pressed into bar at 4000 psi, and resintered at 1180 C for about 15 hrs.

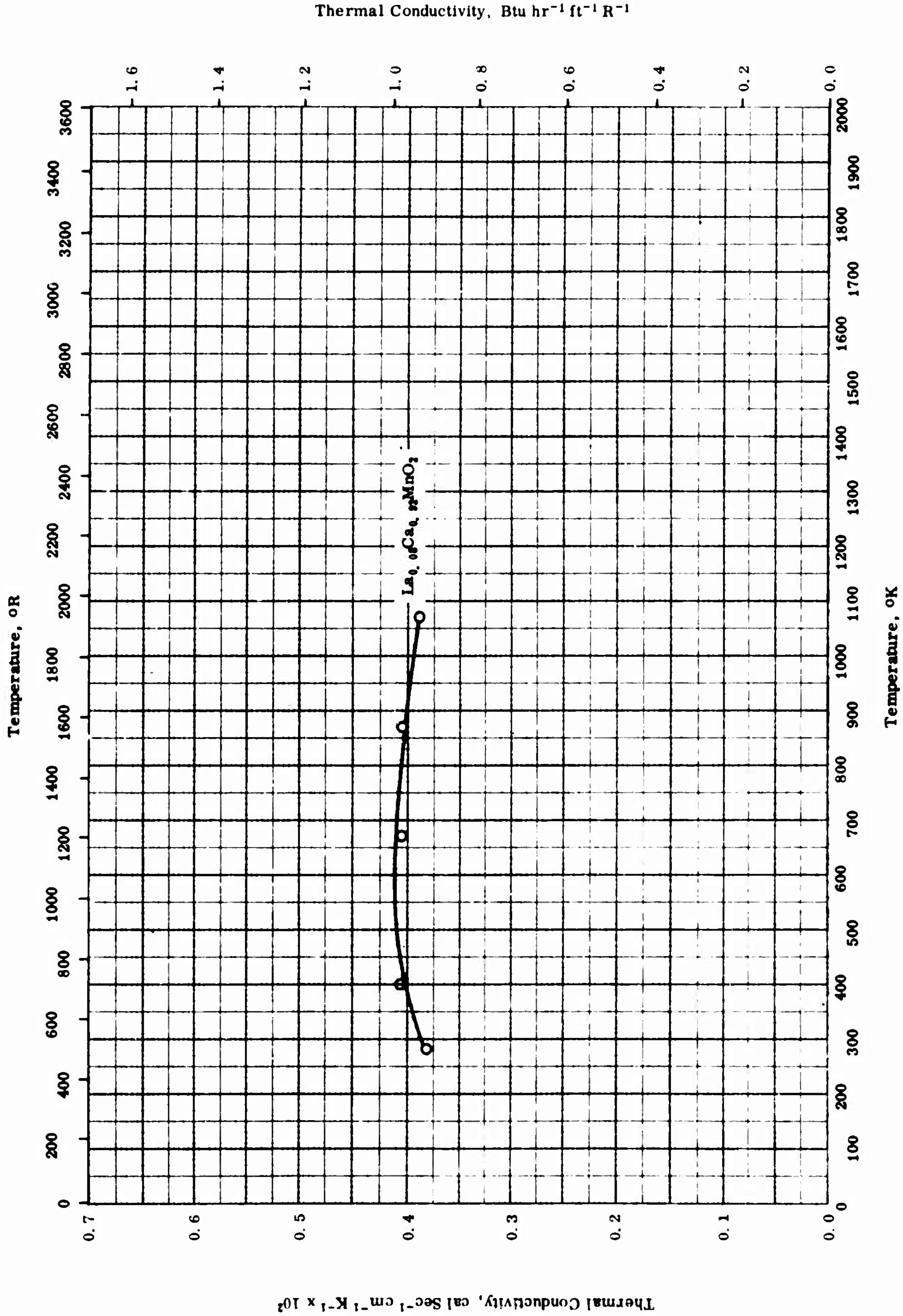


ELECTRICAL RESISTIVITY -- CALCIUM LANTHANUM MANGANESE OXIDE

ELECTRICAL RESISTIVITY -- CALCIUM LANTHANUM MANGANESE OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-3	120-1250		$La_{0.08}Ca_{0.92}MnO_3$.	

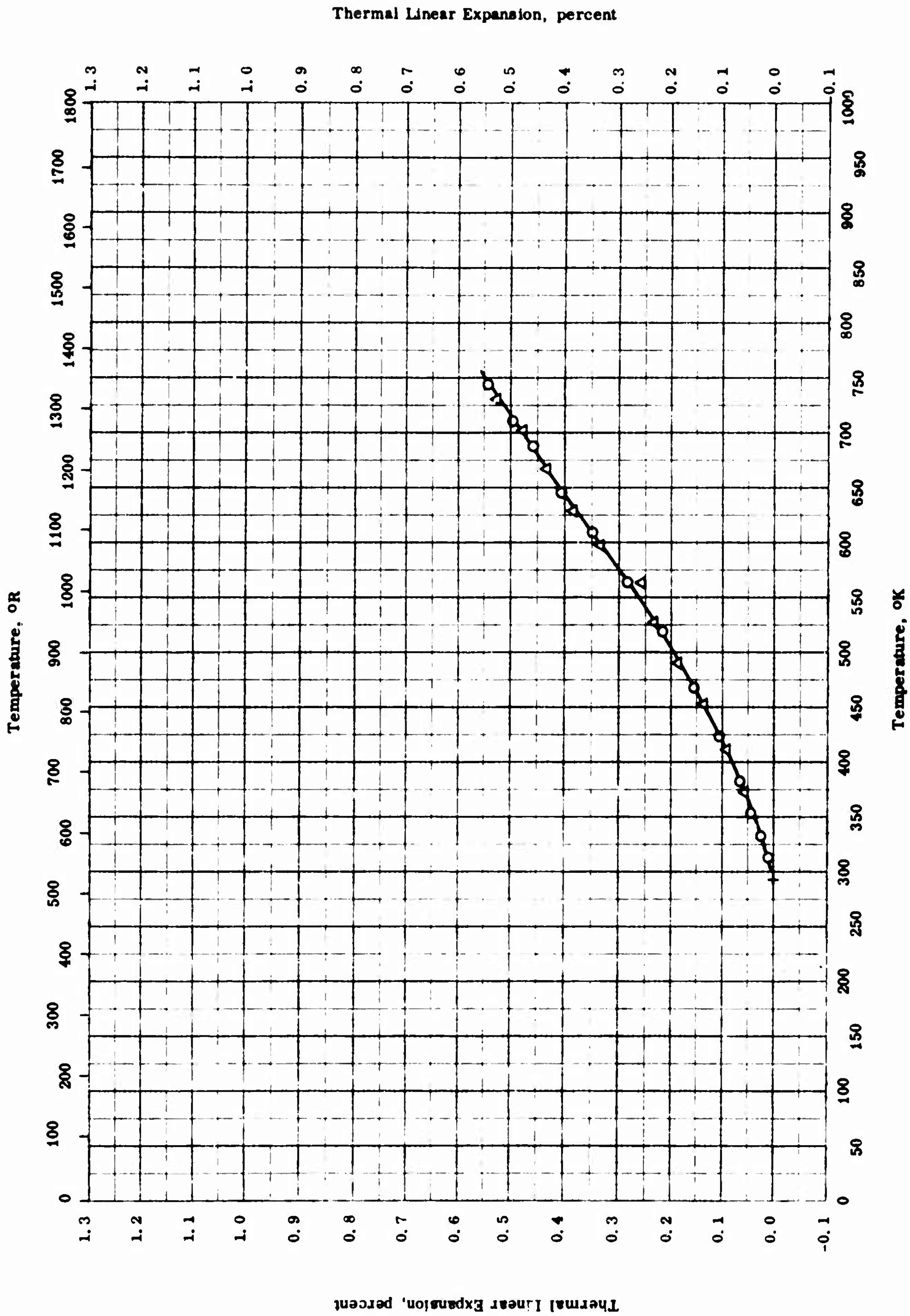


THERMAL CONDUCTIVITY -- CALCIUM LANTHANUM MANGANESE OXIDE

THERMAL CONDUCTIVITY -- CALCIUM LANTHANUM MANGANESE OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-3	280-1070		$La_{0.08}Ca_{0.92}MnO_2$.	

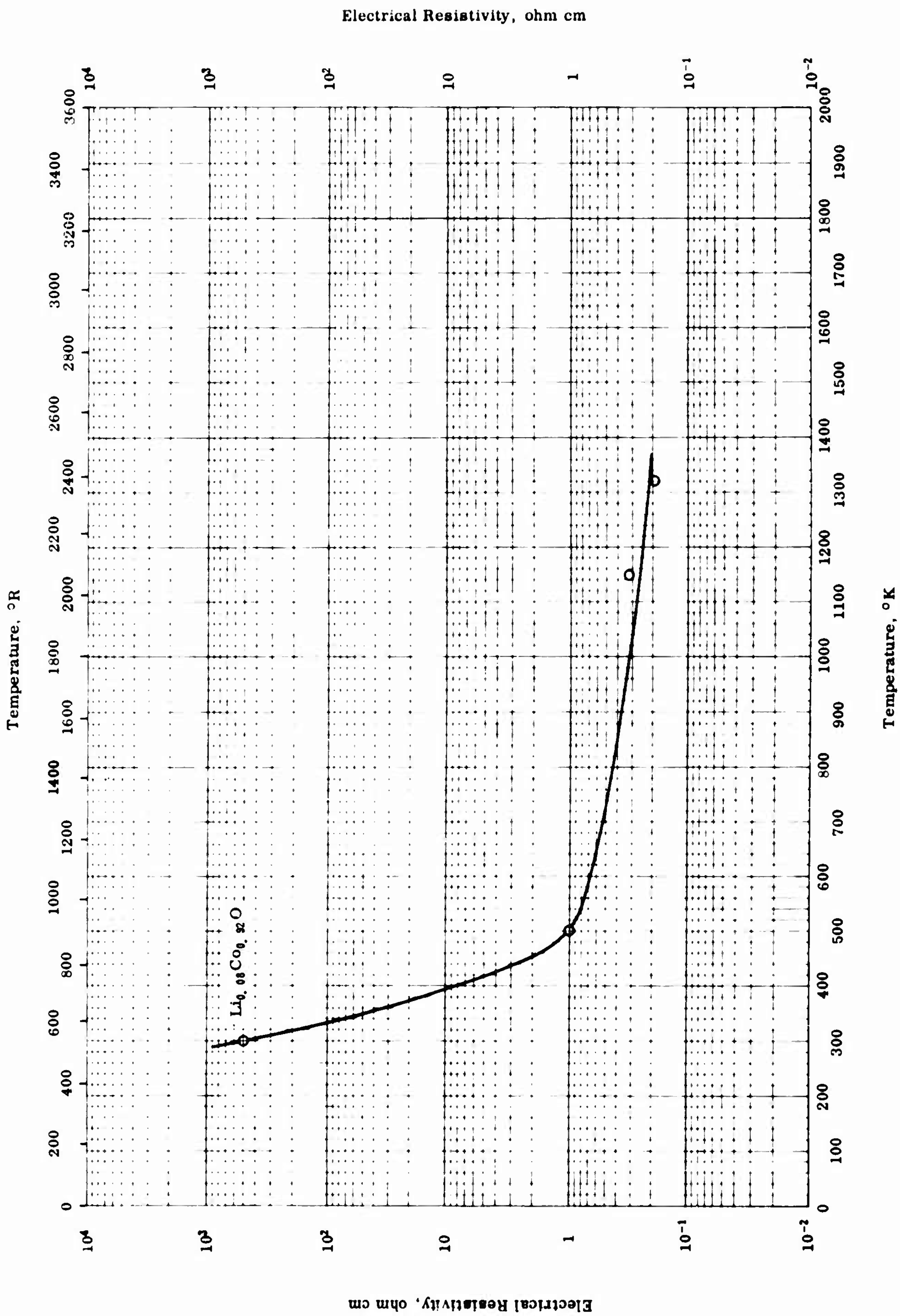


THERMAL LINEAR EXPANSION -- LEAD GERMANIUM OXIDE

THERMAL LINEAR EXPANSION -- LEAD GERMANIUM OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-38	298-743		2 PbO · GeO_2; calculated composition 81.02 PbO and 18.98 GeO_2; prepared from c.p. chemicals; original length 102.8 mm.	Hand-mixed with acetone for 15 to 20 min, air dried, heated slowly to 300 C for 4 hrs, remixed, calcined at 400 C for 24 hrs, cooled, remixed, recalcined at 480 C for 12 hrs, ground, mixed with carbowax solution, nodulized through a 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and fired slowly to 480 C for 6 hrs; measured with heating rate of 120 C hr^{-1}.
△	63-38	298-743		Same as above.	Second run for above sample.

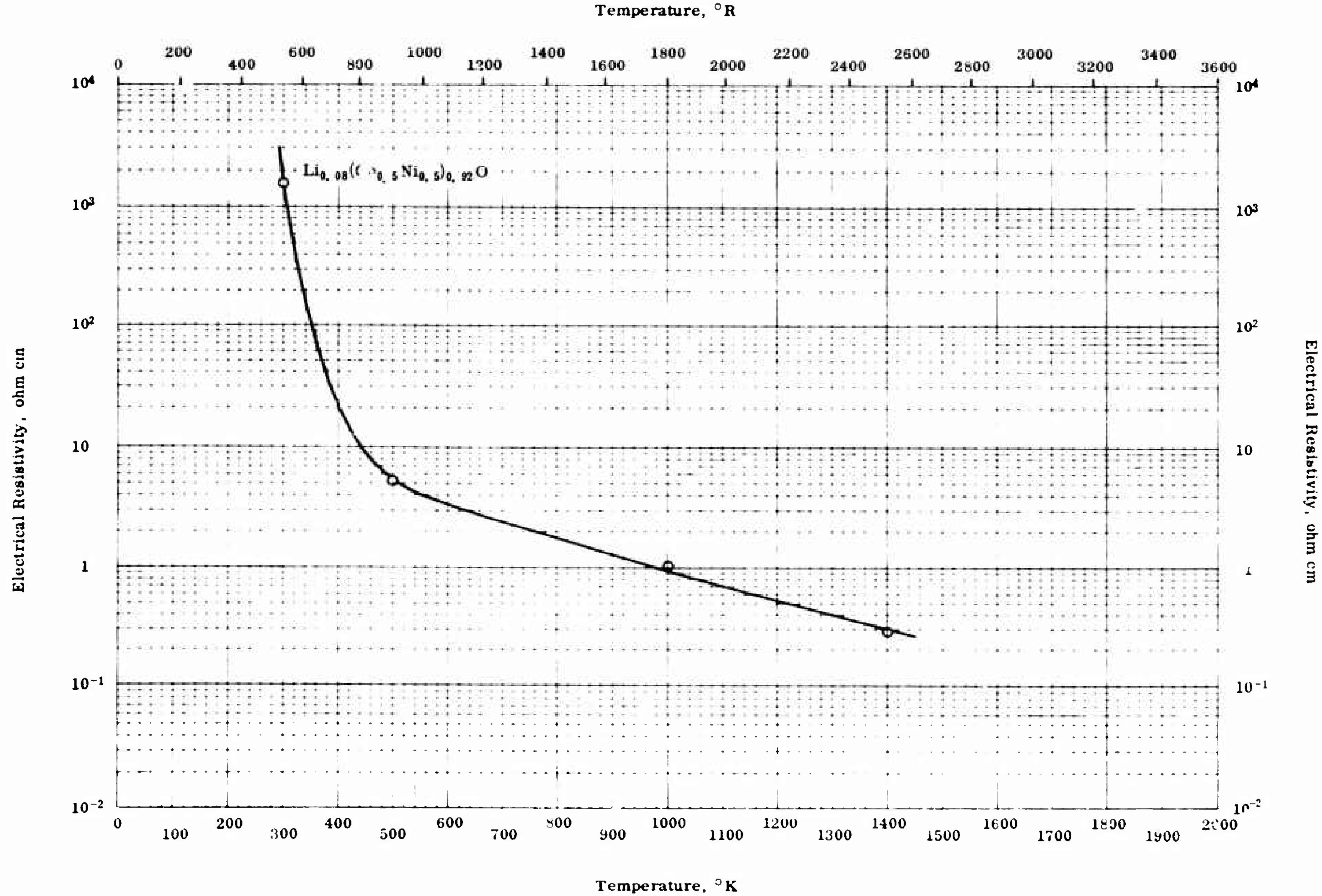


ELECTRICAL RESISTIVITY -- LITHIUM COBALT OXIDE

ELECTRICAL RESISTIVITY -- LITHIUM COBALT OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-3	300-1320		$Li_{0.08}Co_{0.92}O$.	

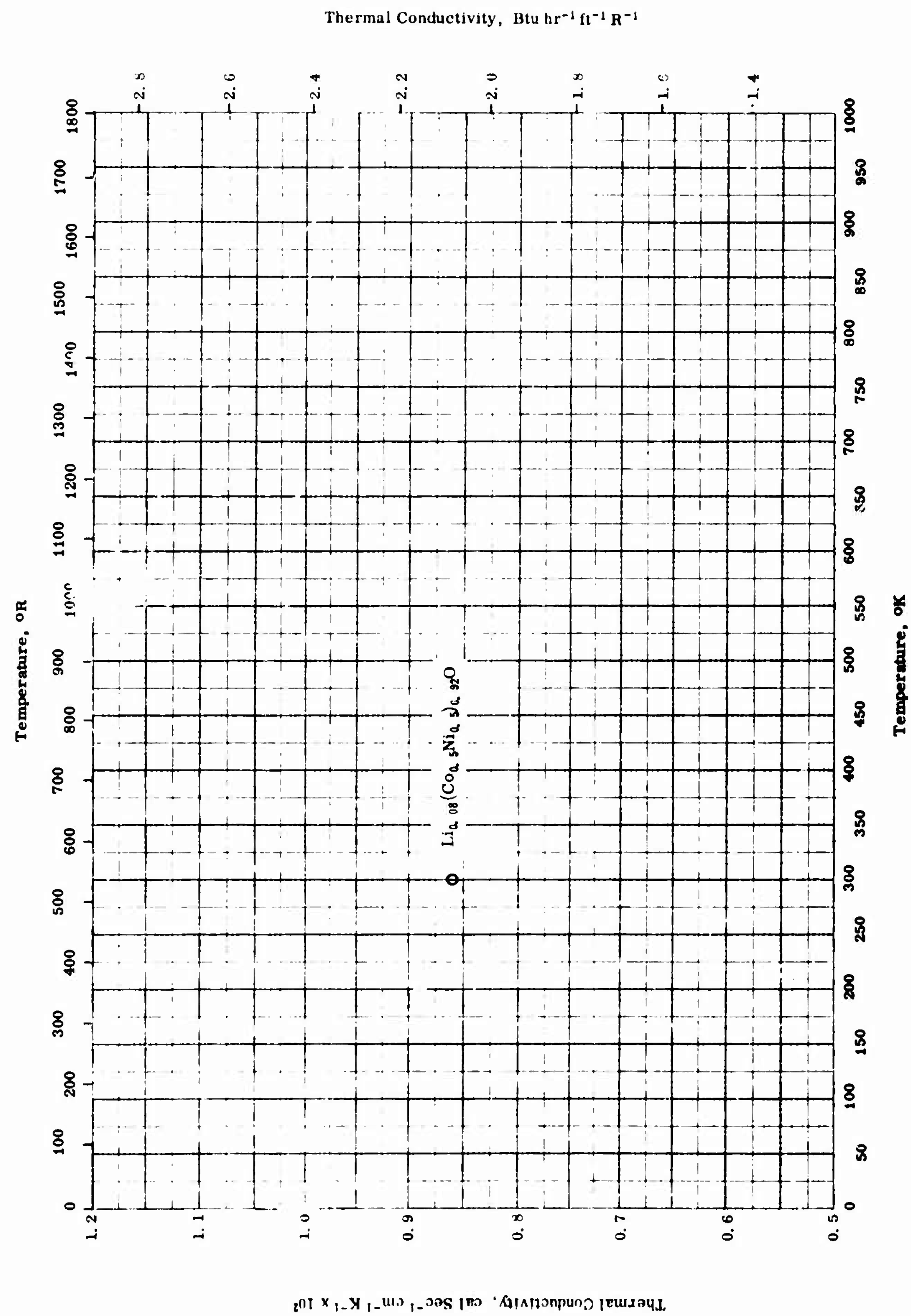


ELECTRICAL RESISTIVITY -- LITHIUM COBALT NICKEL OXIDE

ELECTRICAL RESISTIVITY -- LITHIUM COBALT NICKEL OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-3	300-1400		$Li_{0.08}(Co_{0.5}Ni_{0.5})_{0.92}O$.	

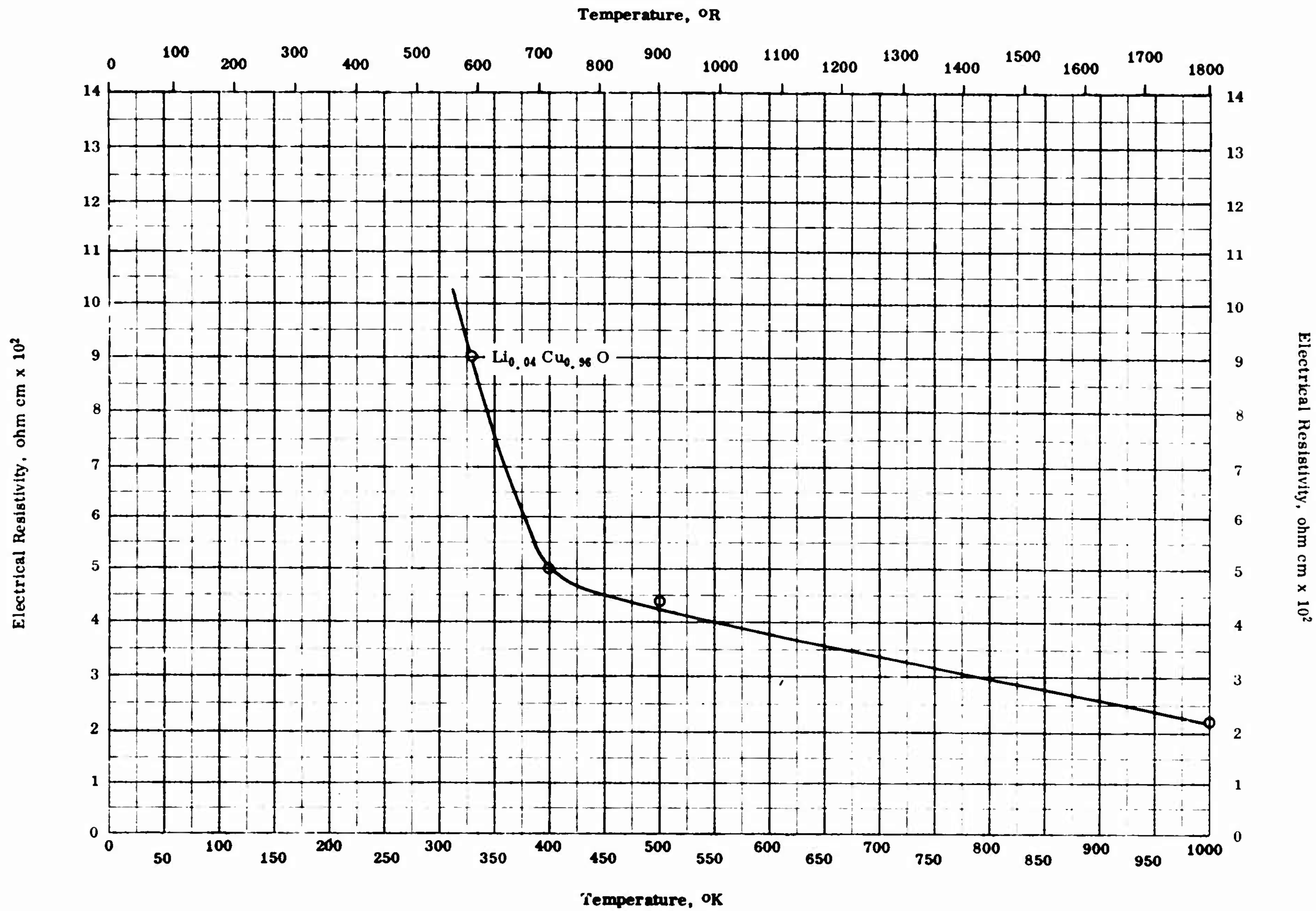


THERMAL CONDUCTIVITY -- LITHIUM COBALT NICKEL OXIDE

THERMAL CONDUCTIVITY -- LITHIUM COBALT NICKEL OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-3	300		$Li_{0.08}(Co_{0.5}Ni_{0.5})_{0.92}O$.	

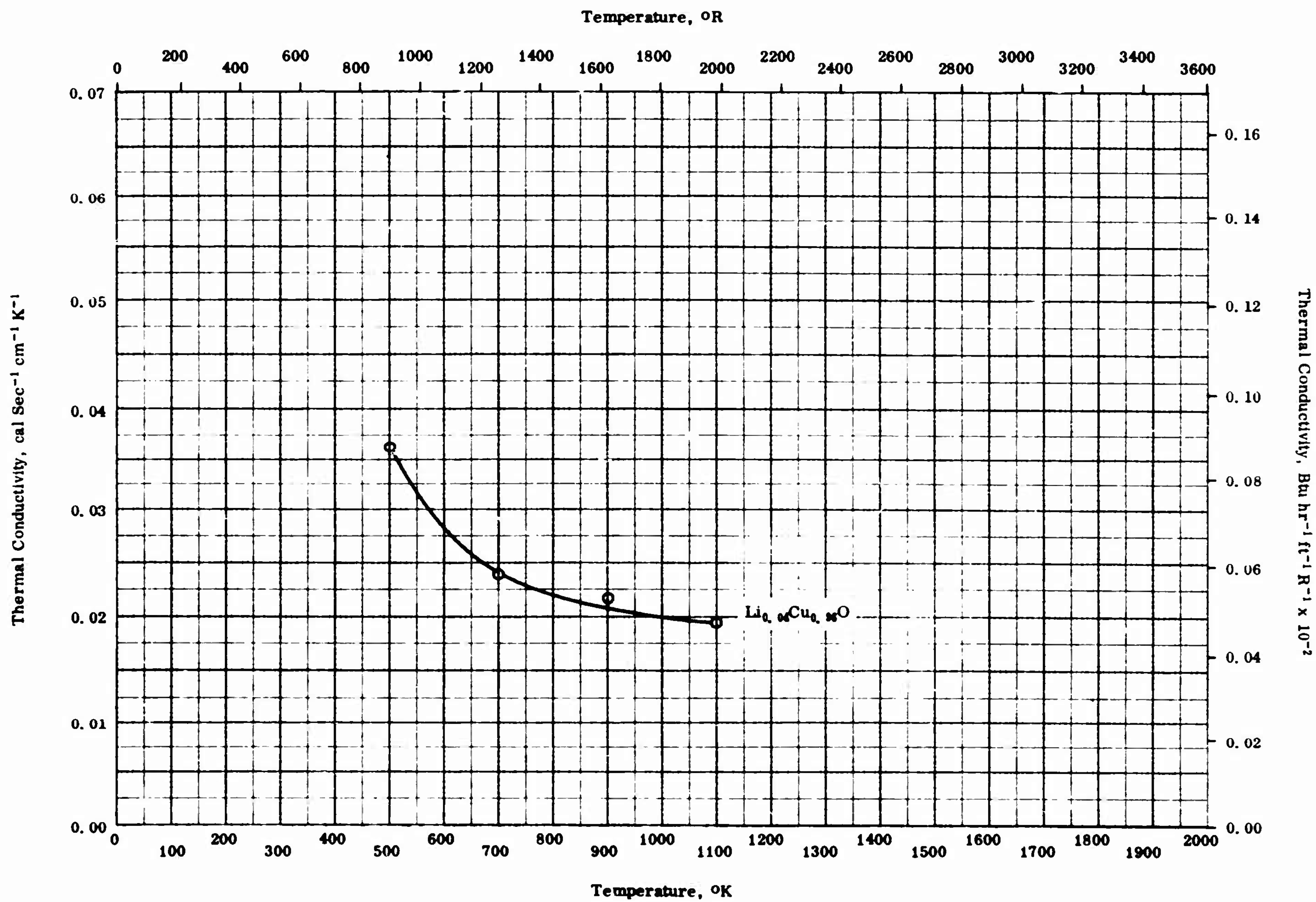


ELECTRICAL RESISTIVITY -- LITHIUM COPPER OXIDE

ELECTRICAL RESISTIVITY -- LITHIUM COPPER OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-3	330-1000		$Li_{0.04}Cu_{0.96}O$.	

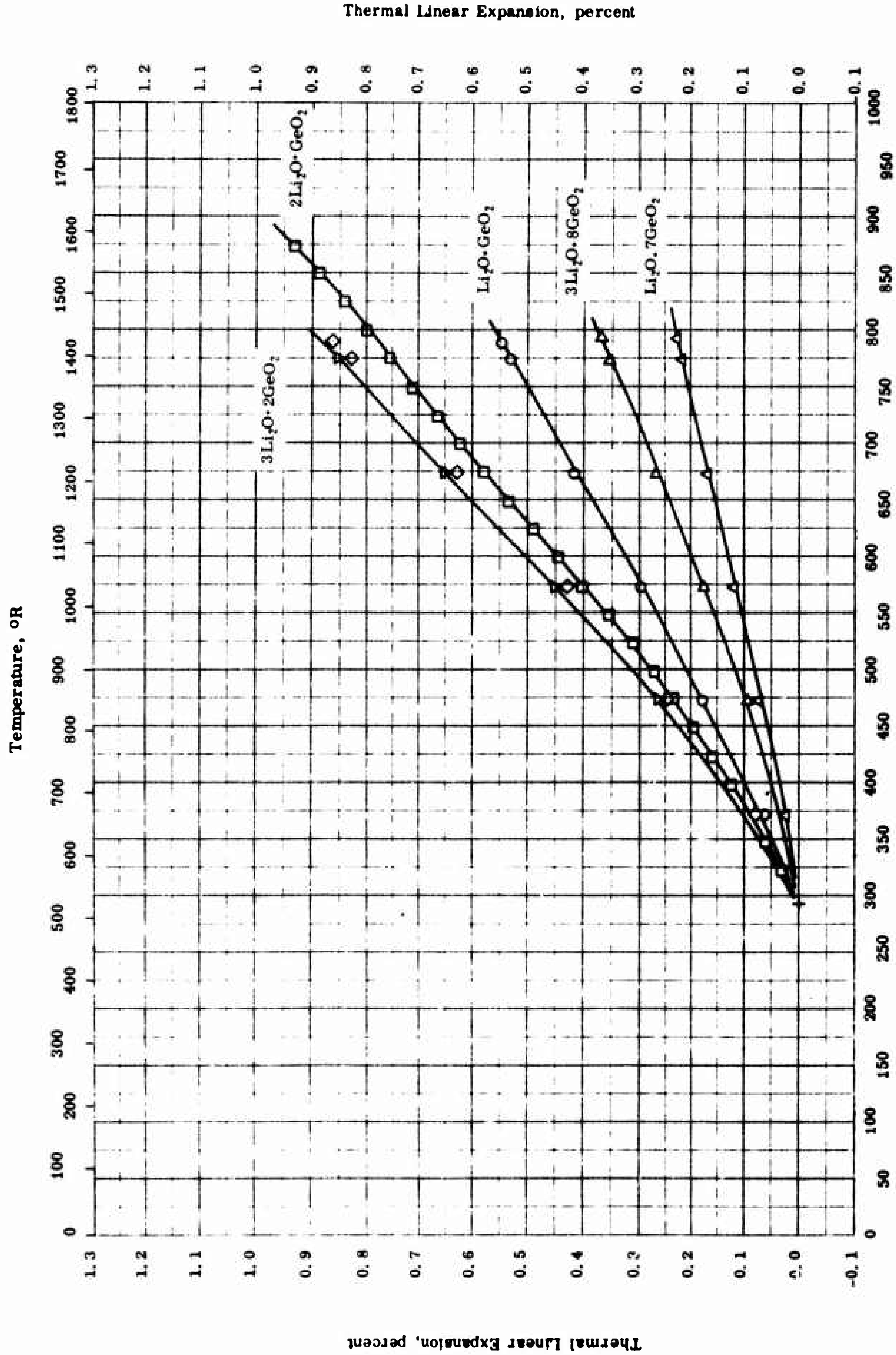


THERMAL CONDUCTIVITY -- LITHIUM COPPER OXIDE

THERMAL CONDUCTIVITY -- LITHIUM COPPER OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-3	500-1100		$Li_{0.04}Cu_{0.96}O$.	

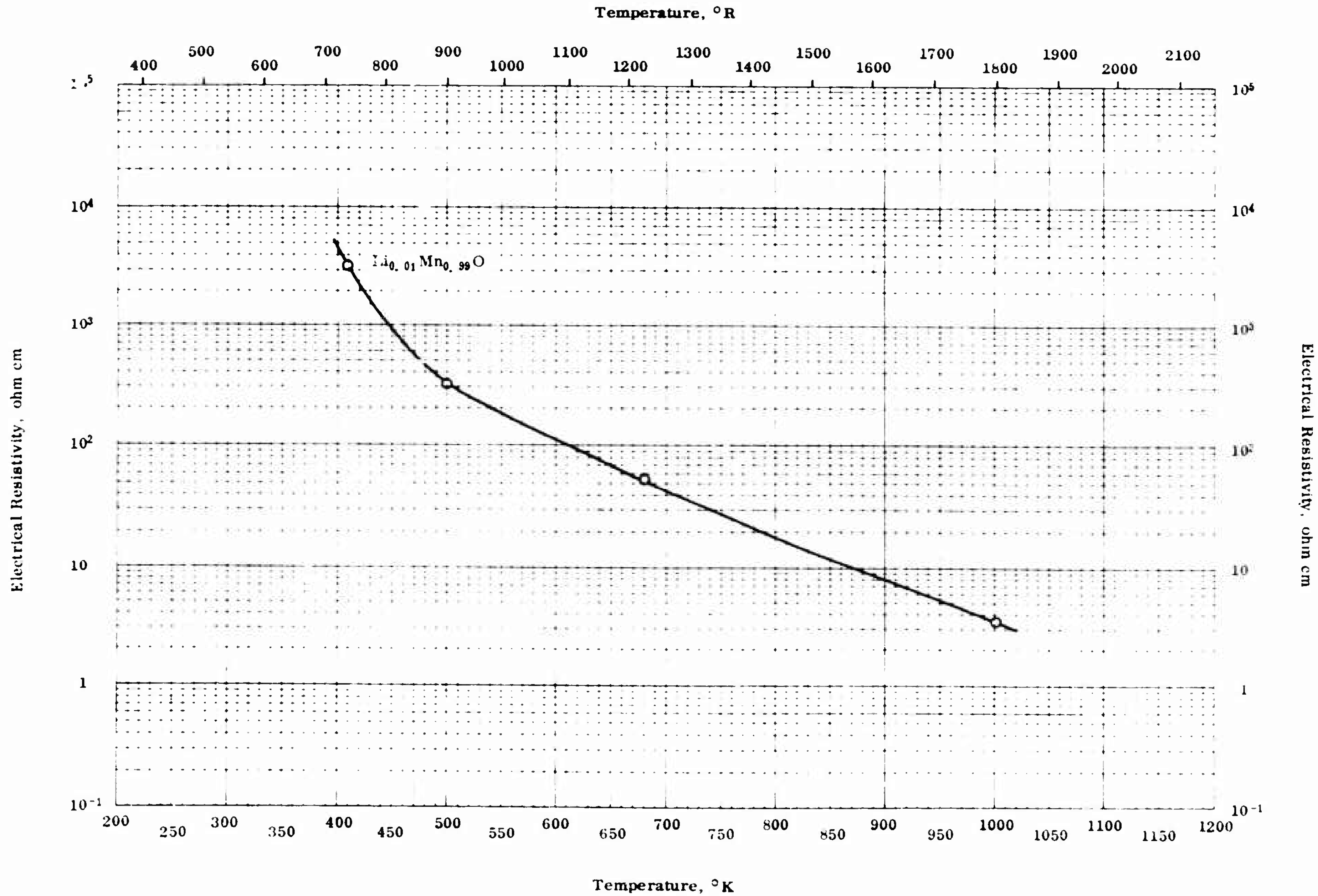


THERMAL LINEAR EXPANSION -- LITHIUM GERMANIUM OXIDES

THERMAL LINEAR EXPANSION -- LITHIUM GERMANIUM OXIDES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	64-23	298-787		$Li_2O \cdot GeO_2$; 25.0 Li_2O and 75.0 GeO_2; prepared from Fisher-Certified reagent grade Li_2CO_3 and electronic-grade GeO_2 from Eagle Picher Co.; density at 30 C 3.51 g cm^{-3}; melting point 124 C; crystalline phase.	Wet-mixed in alcohol, dried at 110 C, solid-state reacted at about 1000 to 1050 C, cooled in air, reheated for about 10 min, and quenched by dipping in water.
△	64-23	298-793		$Li_2O \cdot 7\,GeO_2$; 3.9 Li_2O and 96.1 GeO_2; raw materials same as above; density at 30 C 3.96 g cm^{-3}; melting point 1033 C; crystalline phase.	Wet-mixed in alcohol, dried at 110 C, melted at about 1100 to 1250 C, cooled in air, reheated for about 10 min, and quenched by dipping in water.
□	64-20	303-873		$2\,Li_2O \cdot GeO_2$; prepared from Fisher-Certified reagent grade Li_2CO_3 and electronic grade GeO_2 from Allied Chemical Corp.	Wet-mixed under alcohol, heated at 120 C hr^{-1} to 1200 C, held at 1200 C for 20 hrs, pressed at 5000 psi, and refired at 1200 C for 3 hrs; measured with heating rate of 2.5 C min^{-1}.
◇	64-23	298-789		$2\,Li_2O \cdot GeO_2$; 36.4 Li_2O and 63.6 GeO_2; prepared from Fisher-Certified reagent grade Li_2CO_3 and electronic grade GeO_2 from Eagle Picher Co.; density at 30 C 2.57 g cm^{-3}; melting point 1280 C; crystalline phase.	Wet-mixed in alcohol, dried at 110 C, solid-state reacted at about 1000 to 1050 C, cooled in air, reheated for about 10 min, and quenched by dipping in water.
▽	64-23	298-773		$3\,Li_2O \cdot 2\,GeO_2$; 30.0 Li_2O_3 and 70.0 GeO_2; raw materials same as above; density at 30 C 2.88 g cm^{-3}; melting point 1125 C; crystalline phase.	Prepared same as above.
▷	64-23	298-793		$3\,Li_2O \cdot 8\,GeO_2$; 9.8 Li_2O and 90.2 GeO_2; raw materials same as above; density at 30 C 4.20 g cm^{-3}; melting point 953 C; crystalline phase.	Wet-mixed in alcohol, dried at 110C, melted at about 1100 to 1250 C, cooled in air, reheated for about 10 min, and quenched by dipping in water.

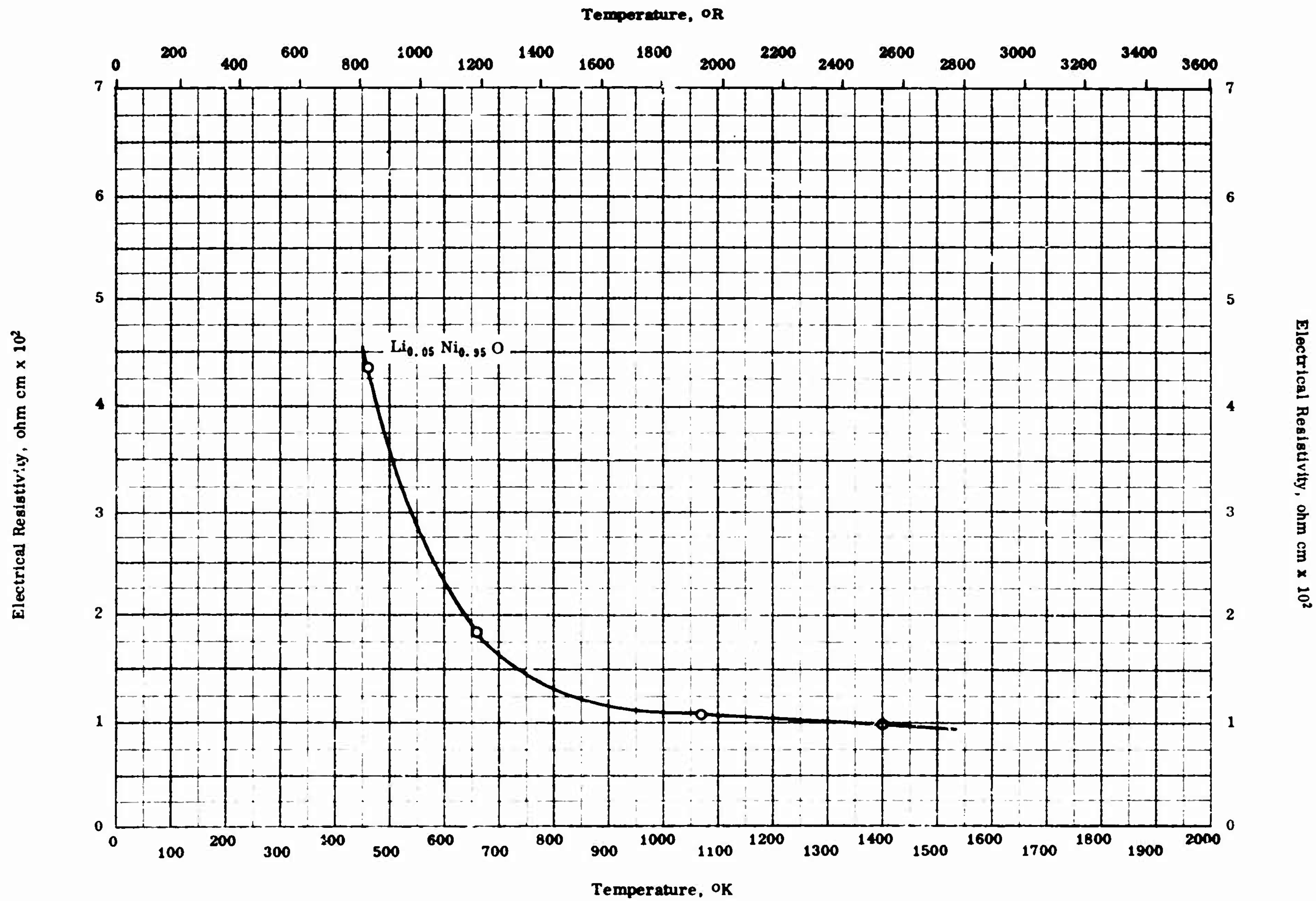


ELECTRICAL RESISTIVITY -- LITHIUM MANGANESE OXIDE

ELECTRICAL RESISTIVITY -- LITHIUM MANGANESE OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-3	400-1000		$Li_{0.01}Mn_{0.99}O$.	

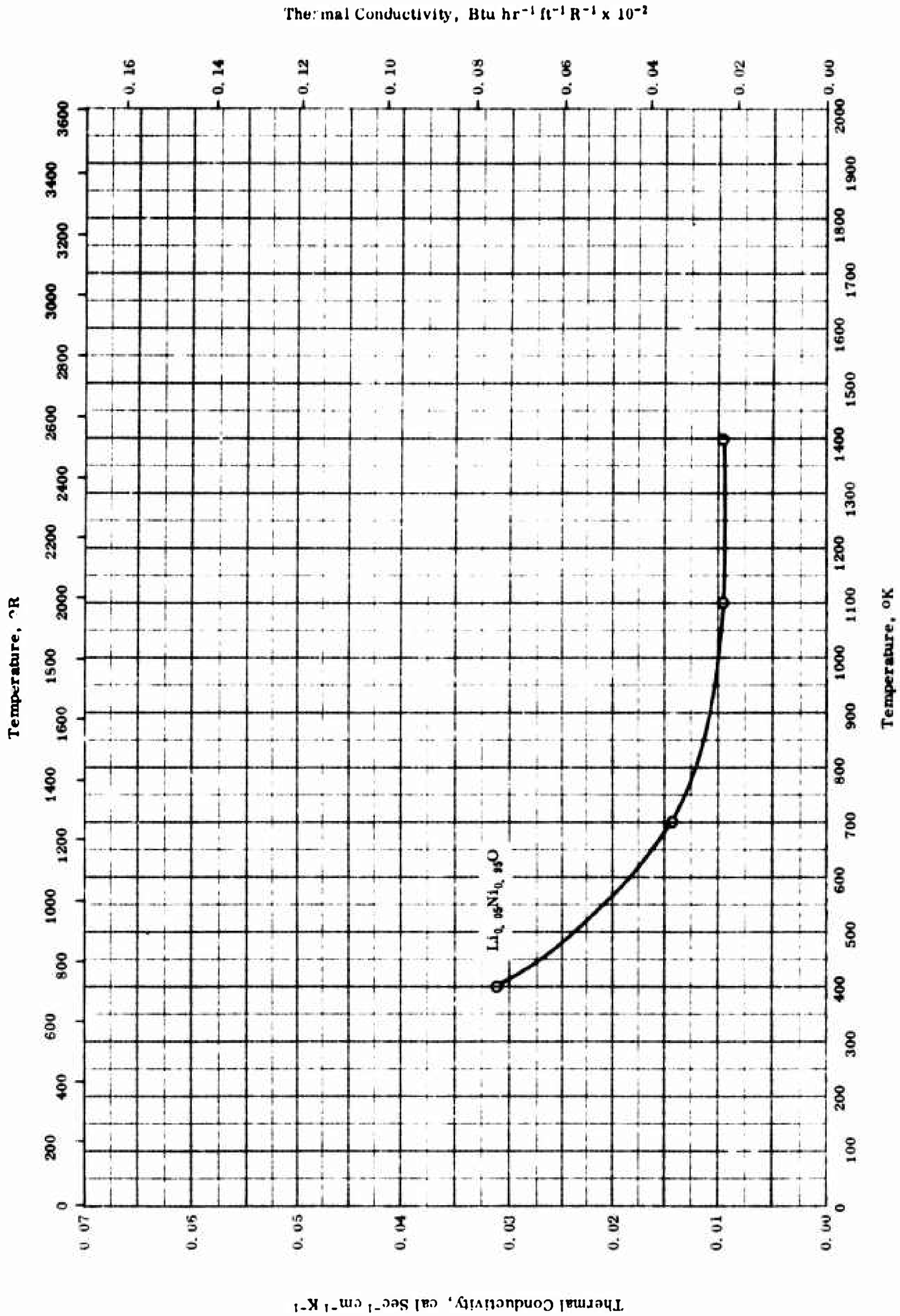


ELECTRICAL RESISTIVITY -- LITHIUM NICKEL OXIDE

ELECTRICAL RESISTIVITY -- LITHIUM NICKEL OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-3	460-1400		$Li_{0.05}Ni_{0.95}O$.	

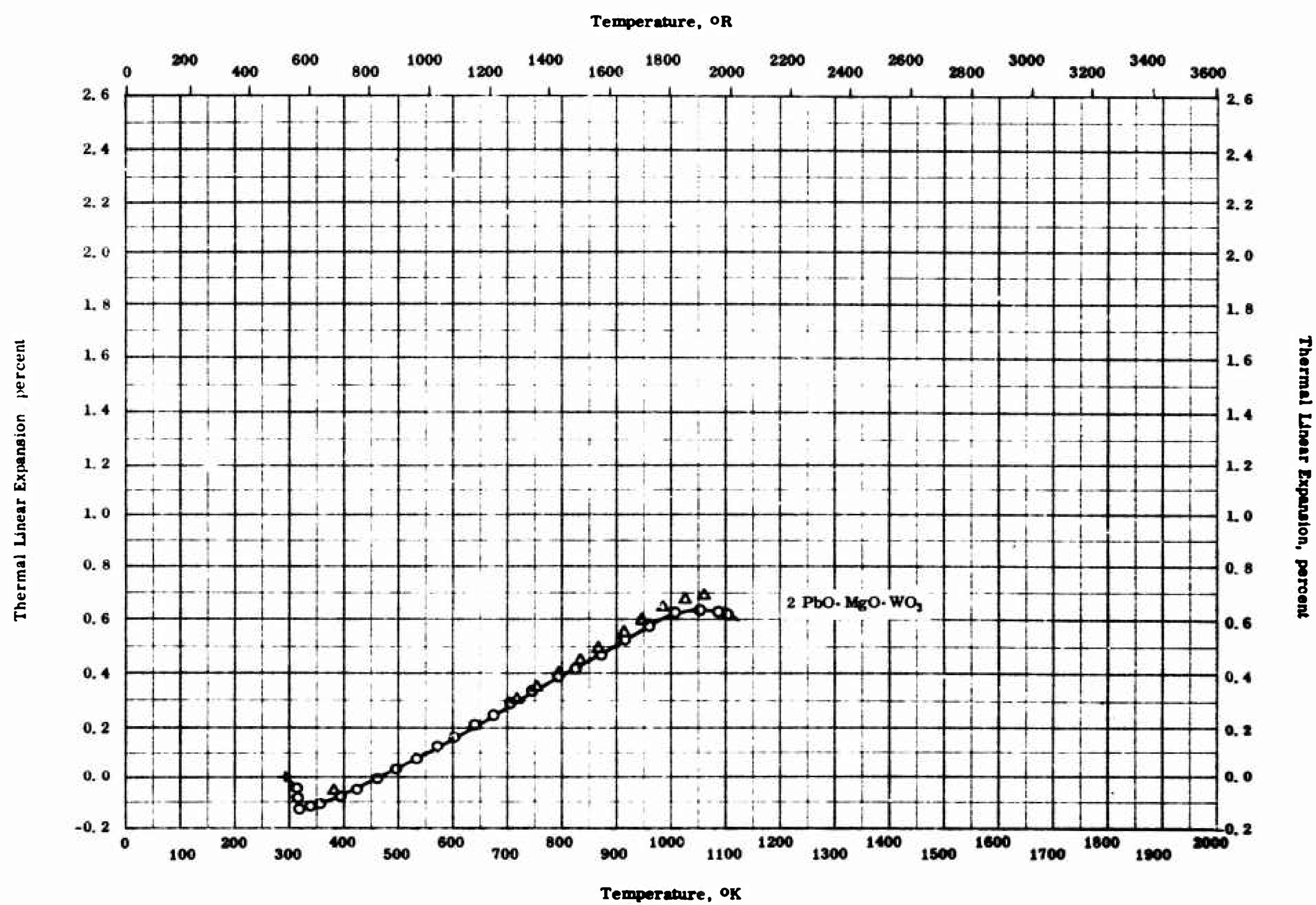


THERMAL CONDUCTIVITY -- LITHIUM NICKEL OXIDE

THERMAL CONDUCTIVITY -- LITHIUM NICKEL OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-3	400-1400		$Li_{0.05}Ni_{0.95}O$.	

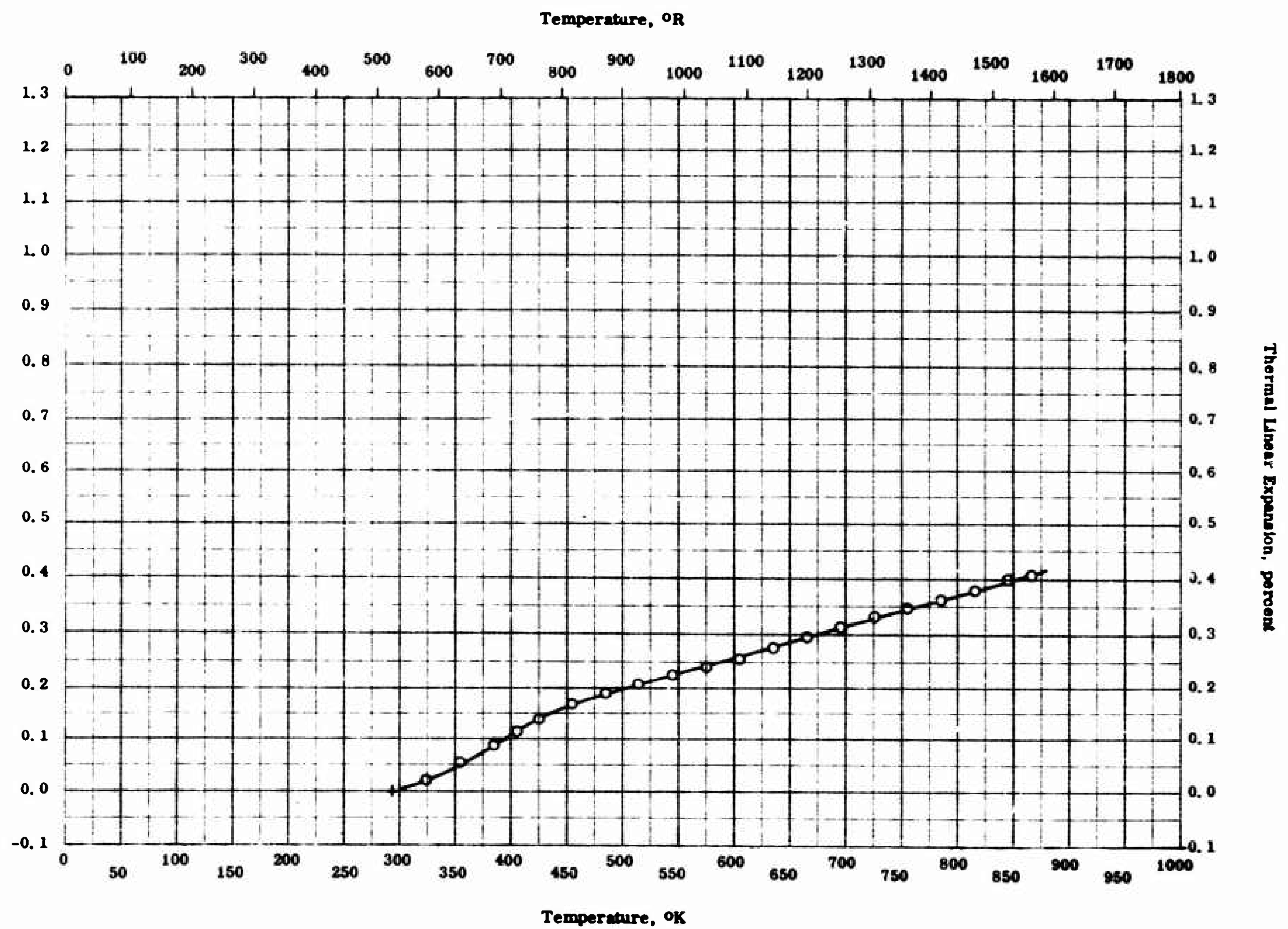


THERMAL LINEAR EXPANSION -- MAGNESIUM TUNGSTEN LEAD OXIDE

THERMAL LINEAR EXPANSION -- MAGNESIUM TUNGSTEN LEAD OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-38	298-1103		2 $PbO \cdot MgO \cdot WO_3$; calculated composition 62.12 PbO, 32.27 WO_3, and 5.61 MgO; original length 97 mm; prepared from c.p. chemicals.	Hand-mixed with acetone for 15 to 20 min, air dried heated slowly to 300 C for 4 hrs, remixed, calcined at 800 C for 24 hrs, cooled, remixed, recalcined at 900 C for 24 hrs, ground, mixed with Carbowax solution, nodulized through a 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at at 1000 psi, and fired slowly to 900 C for 6 hrs; measured with heating rate of 120 C hr^{-1}.
△	63-38	298-1061		Same as above.	Second run for above sample.

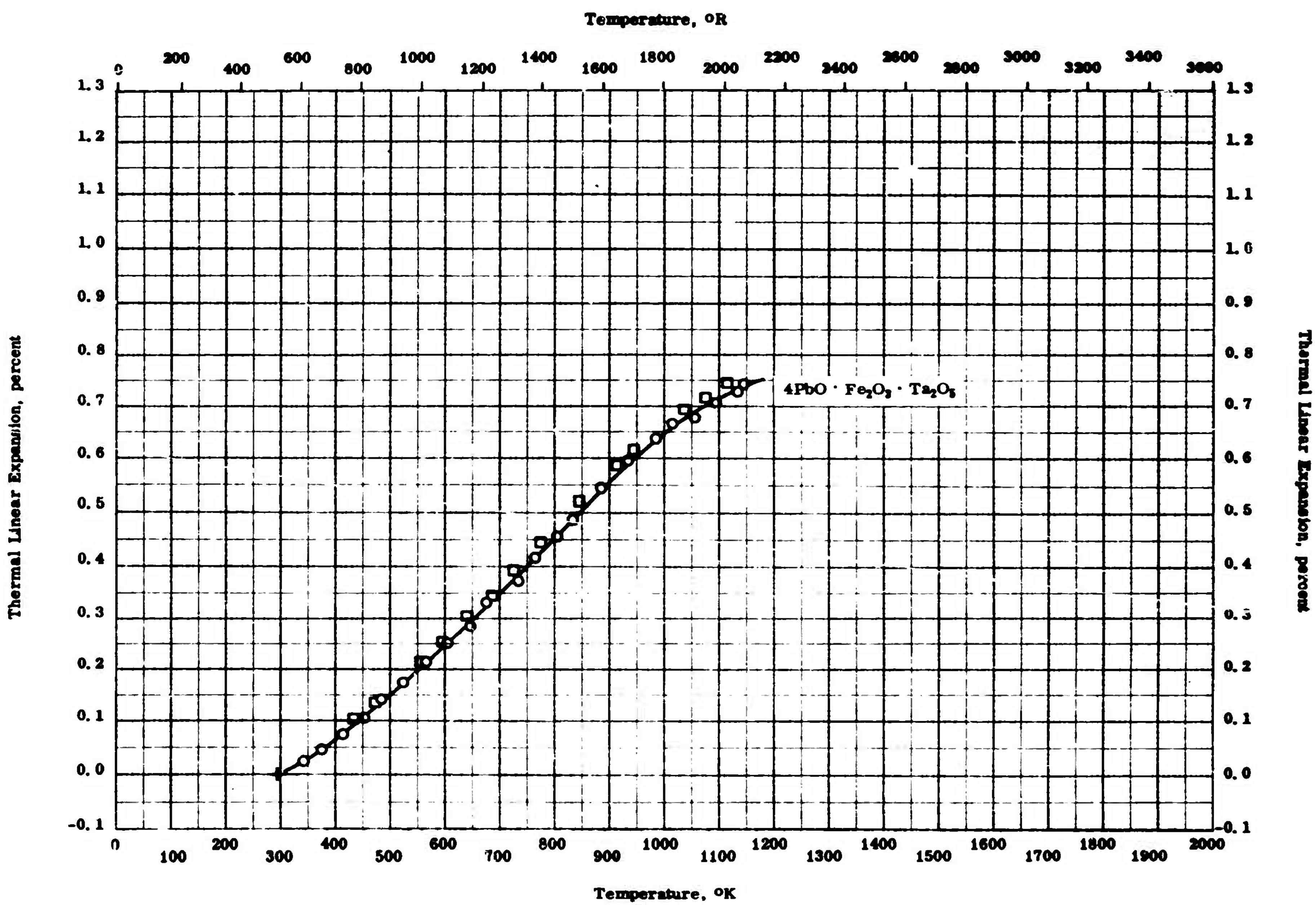


THERMAL LINEAR EXPANSION -- SODIUM TUNGSTEN OXIDE

THERMAL LINEAR EXPANSION -- SODIUM TUNGSTEN OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	64-21	305-865		Na_xWO_3 (x > 0.8), sodium tungsten bronze; prepared from reagent grade $Na_2WO_4 \cdot 2H_2O$ and reagent grade metallic tungsten powder (particle size < 10μ); cubic, polycrystalline; x-ray examination indicated small amount of metallic tungsten.	60 g $Na_2WO_4 \cdot 2H_2O$ mixed with 67 g tungsten powder, heated to 1000 C for 4 hrs in air, cooled, cut into 3 mm² cross section by 15 mm long rod, washed with pure water, reheated to 600 C, and cooled gradually.

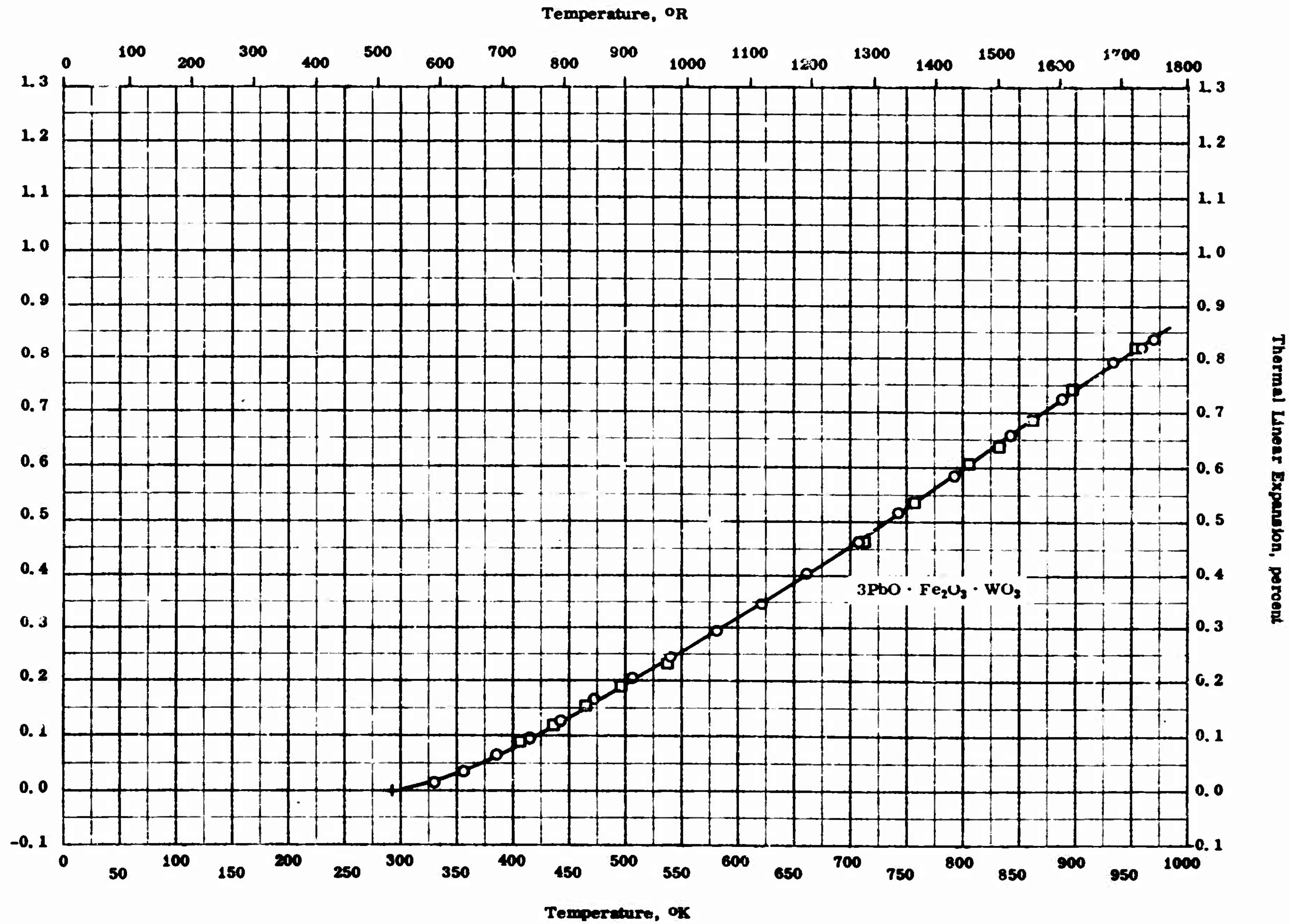


THERMAL LINEAR EXPANSION -- TANTALUM IRON LEAD OXIDE

THERMAL LINEAR EXPANSION -- TANTALUM IRON LEAD OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-38	298-1147		$4PbO \cdot Fe_2O_3 \cdot Ta_2O_5$; calculated composition 59.74 PbO, 29.57 Ta_2O_5, and 10.69 Fe_2O_3; prepared from c.p. chemicals; original length 98 mm.	Hand-mixed with acetone for 15 to 20 min, air dried, heated slowly to 300 C for 4 hrs, remixed, calcined at 800 C for 24 hrs, ground, mixed with carbowax solution, nodulized through a 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and fired slowly to 900 C for 6 hrs; measured with heating rate of 120 C hr^{-1}.
□	63-38	298-1148		Same as above.	Second run for above sample.

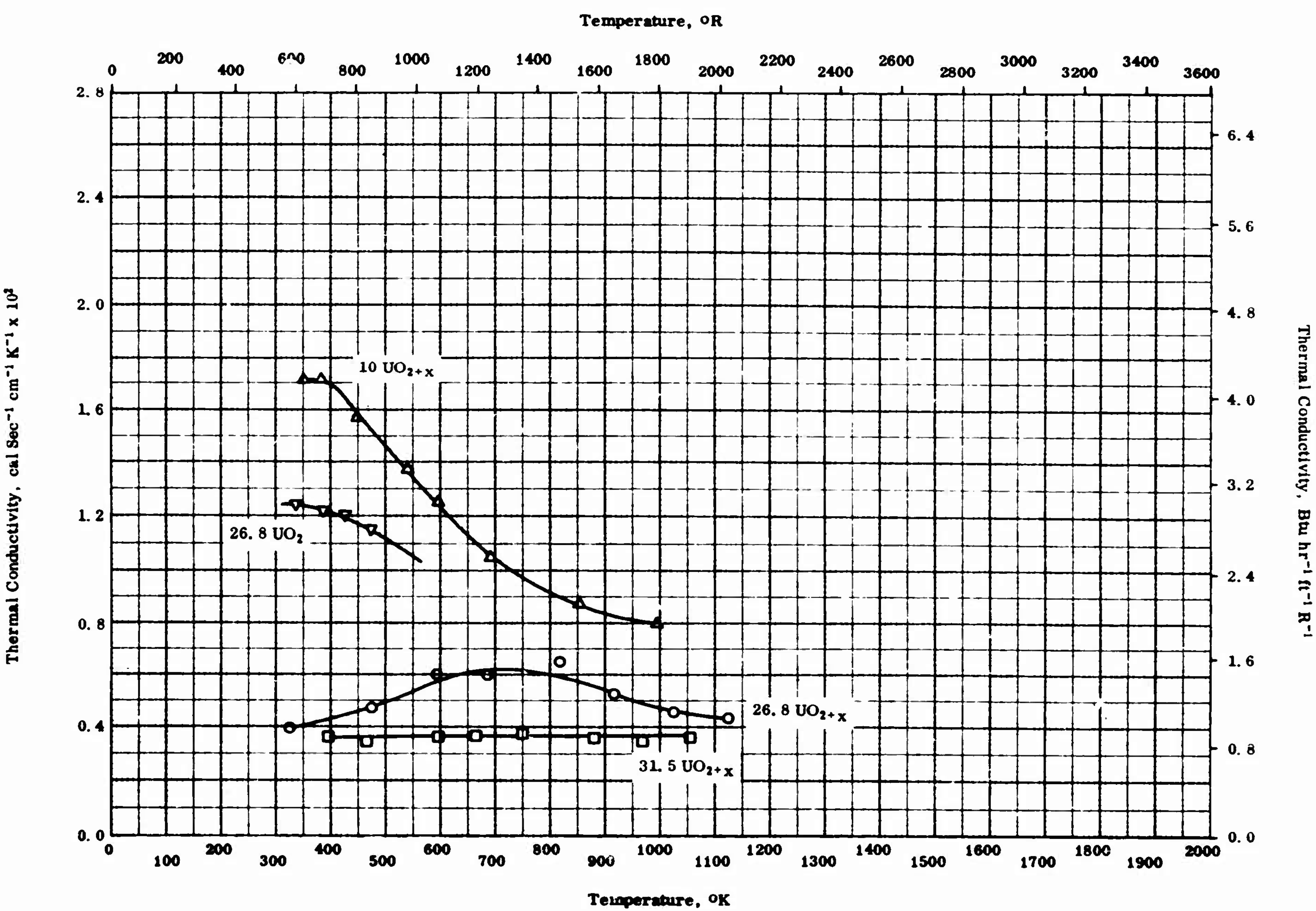


THERMAL LINEAR EXPANSION -- TUNGSTEN IRON LEAD OXIDE

THERMAL LINEAR EXPANSION -- TUNGSTEN IRON LEAD OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-38	298-970		$3PbO \cdot Fe_2O_3 \cdot WO_3$; calculated composition 63.10 PbO, 15.05 Fe_2O_3, and 21.85 WO_3; prepared from c.p. chemicals; original length 88.3 mm.	Hand-mixed with acetone for 15 to 20 min, air dried, heated slowly to 300 C for 4 hrs, remixed, calcined at 600 C for 24 hrs, cooled, remixed, recalcined at 700 C for 24 hrs, ground, mixed with carbowax solution, nodulized through a 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and fired slowly to 700 C for 6 hrs; measured with heating rate of 120 C hr^{-1}.
□	63-38	298-970		Same as above.	Second run for above sample.

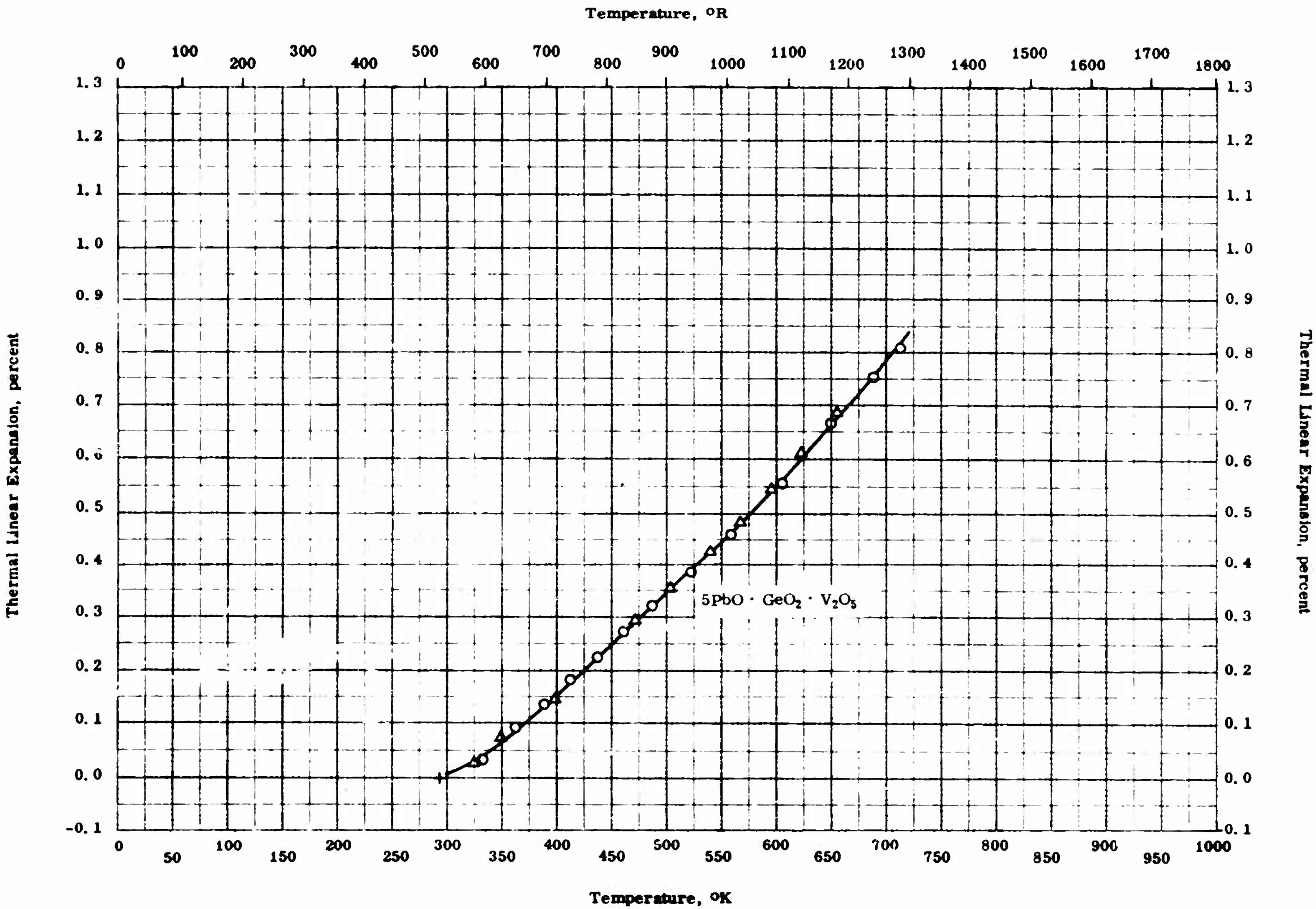


THERMAL CONDUCTIVITY -- URANIUM THORIUM OXIDE

THERMAL CONDUCTIVITY -- URANIUM THORIUM OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▽	59-1	336-471	± 4	$Th_{0.736}U_{0.264}O_2$; 73.2 ThO_2 and 26.8 UO_2 solid solution.	Corresponding to 26.4 mole % UO_2 and 73.6 mole % ThO_2.
○	59-1	324-1123	± 4	$Th_{0.736}U_{0.264}O_{2+x}$; same as above with undermined oxygen content, $0<x\leq 0.25$; density 9.48 g cm^{-3} and porosity 5.0%.	Same as above; heat in air above 500 C; data corrected to theoretical density.
□	59-1	393-1053	± 4	$Th_{0.69}U_{0.31}O_{2+x}$; 68.5 ThO_2 and 31.5 UO_2 solid solution; undetermined oxygen content $0<x\leq 0.25$; density 8.16 g cm^{-3} and porosity 18%.	Corresponding to 31 mole % UO_2; data corrected to theoretical density.
△	59-1	351-991	± 4	$Th_{0.9}U_{0.1}O_{2+x}$; 89.8 ThO_2 and 10.2 UO_2 solid solution; undetermined oxygen content $0<x\leq 0.25$; density 8.89 g cm^{-3} and porosity 9.4%.	Corresponding to 10 mole % UO_2; data corrected to theoretical density.

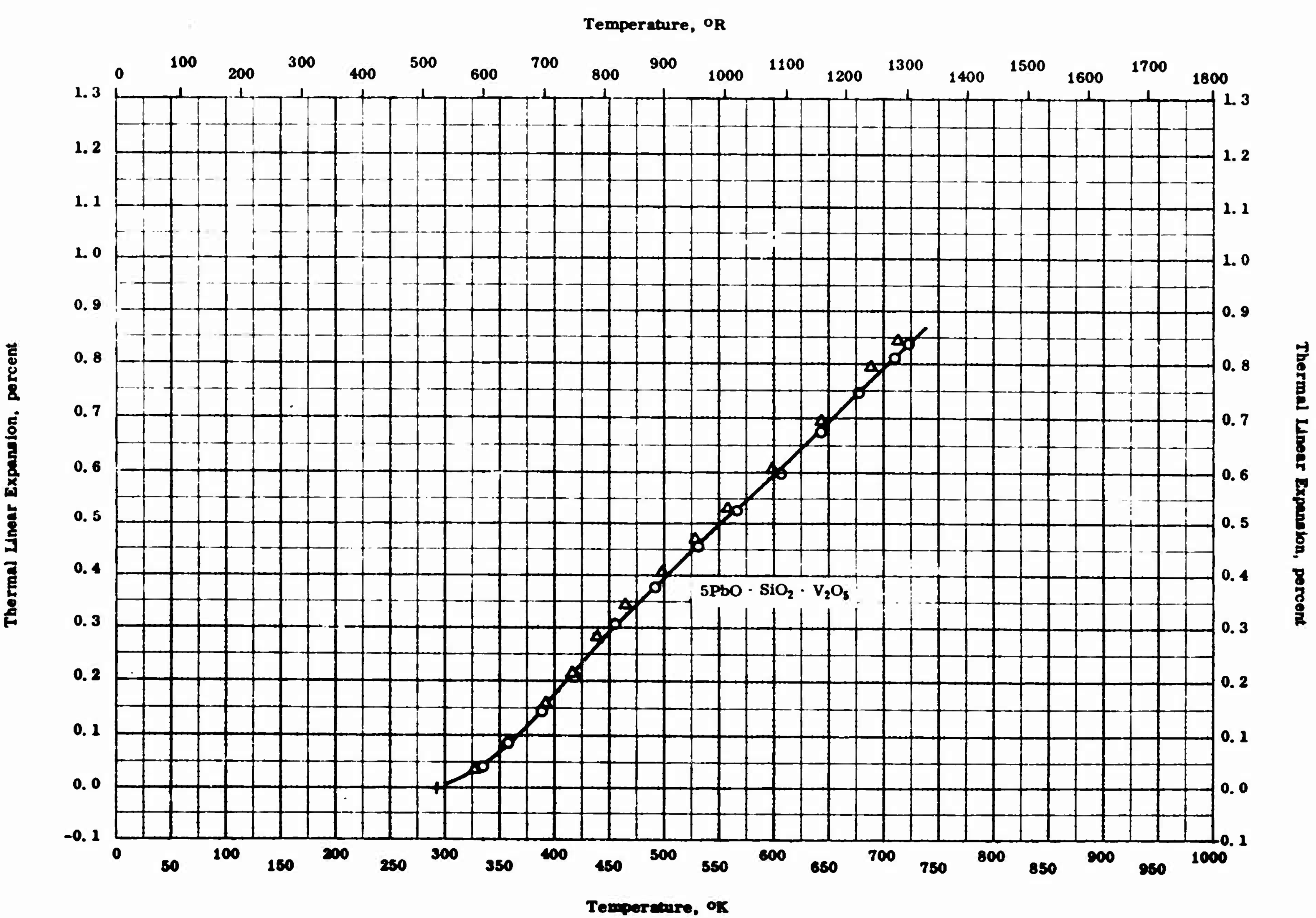


THERMAL LINEAR EXPANSION -- VANADIUM GERMANIUM LEAD OXIDE

THERMAL LINEAR EXPANSION -- VANADIUM GERMANIUM LEAD OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	63-38	298-713		$5PbO \cdot GeO_2 \cdot V_2O_5$; calculated composition 79.57 PbO, 12.97 V_2O_5, and 7.46 GeO_2; prepared from c.p. chemicals; original length 96.3 mm; melting temperature 905 C.	Hand-mixed with acetone for 15 to 20 min, air dried, heated slowly to 300 C for 4 hrs, remixed, calcined at 400 C for 24 hrs, cooled, remixed, recalcined at 700 C for 24 hrs, ground, mixed with carbowax solution, nodulized through a 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and fired slowly to 480 C for 6 hrs; measured with heating rate of 120 C hr^{-1}.
Δ	63-38	298-713		Same as above.	Second run for above sample.

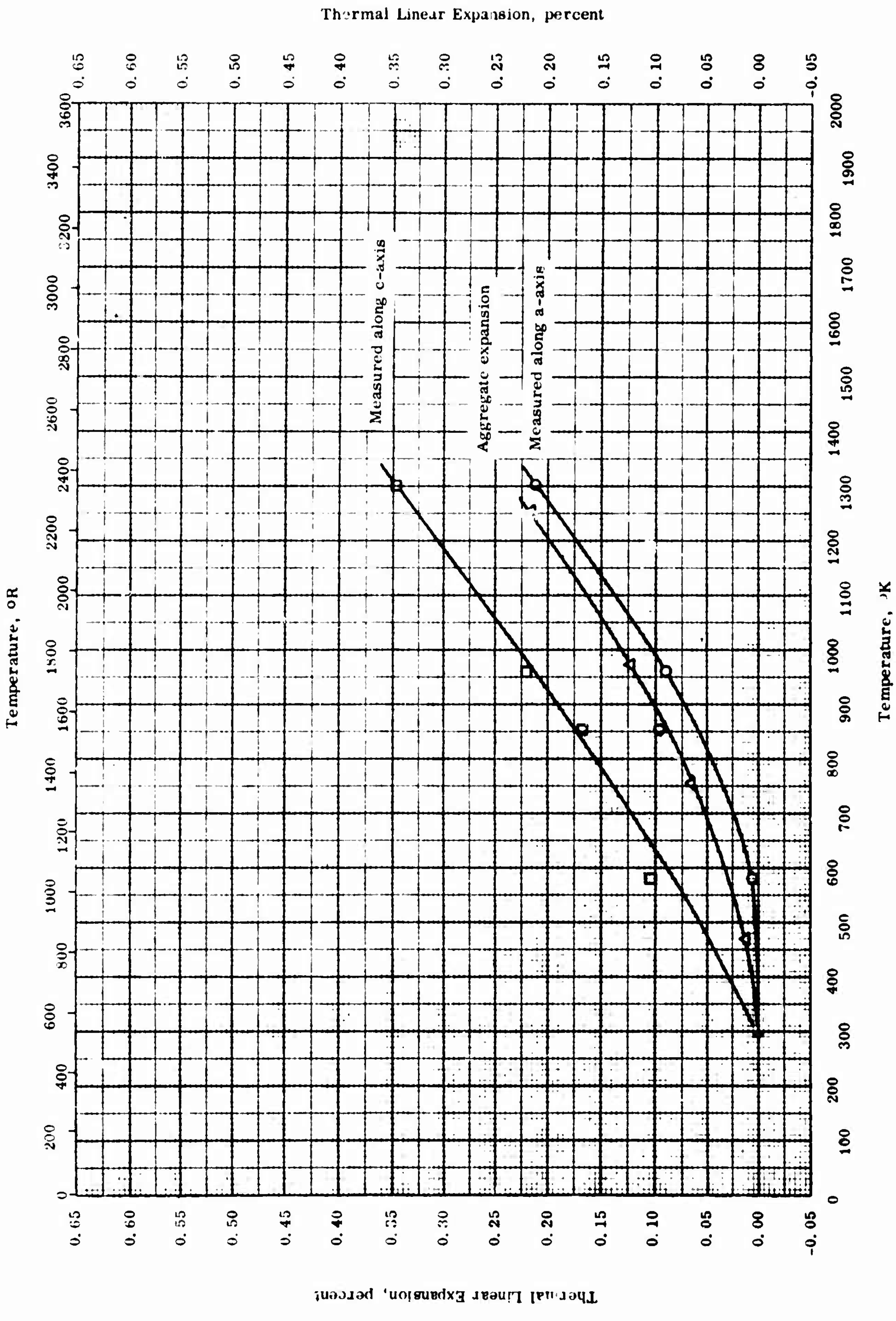


THERMAL LINEAR EXPANSION -- VANADIUM SILICON LEAD OXIDE

THERMAL LINEAR EXPANSION -- VANADIUM SILICON LEAD OXIDE

REFERENCE INFORMATION

Symbol	Ref	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-38	298-723		$5PbO \cdot SiO_2 \cdot V_2O_5$; calculated composition 82.18 PbO, 13.39 V_2O_5, and 4.42 SiO_2; prepared from c.p. chemicals; melting temperature 875 C; original length 92 mm.	Hand-mixed with acetone for 15 to 20 min, air dried, heated slowly to 300 C for 4 hrs, remixed, calcined at 400 C for 24 hrs, cooled, remixed, recalcined at 700 C for 24 hrs, ground, mixed with carbowax solution, nodulized through a 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and fired slowly to 470 C for 6 hrs; measured with heating rate of 120 C hr^{-1}.
△	63-38	298-713		Same as above.	Second run for above sample.

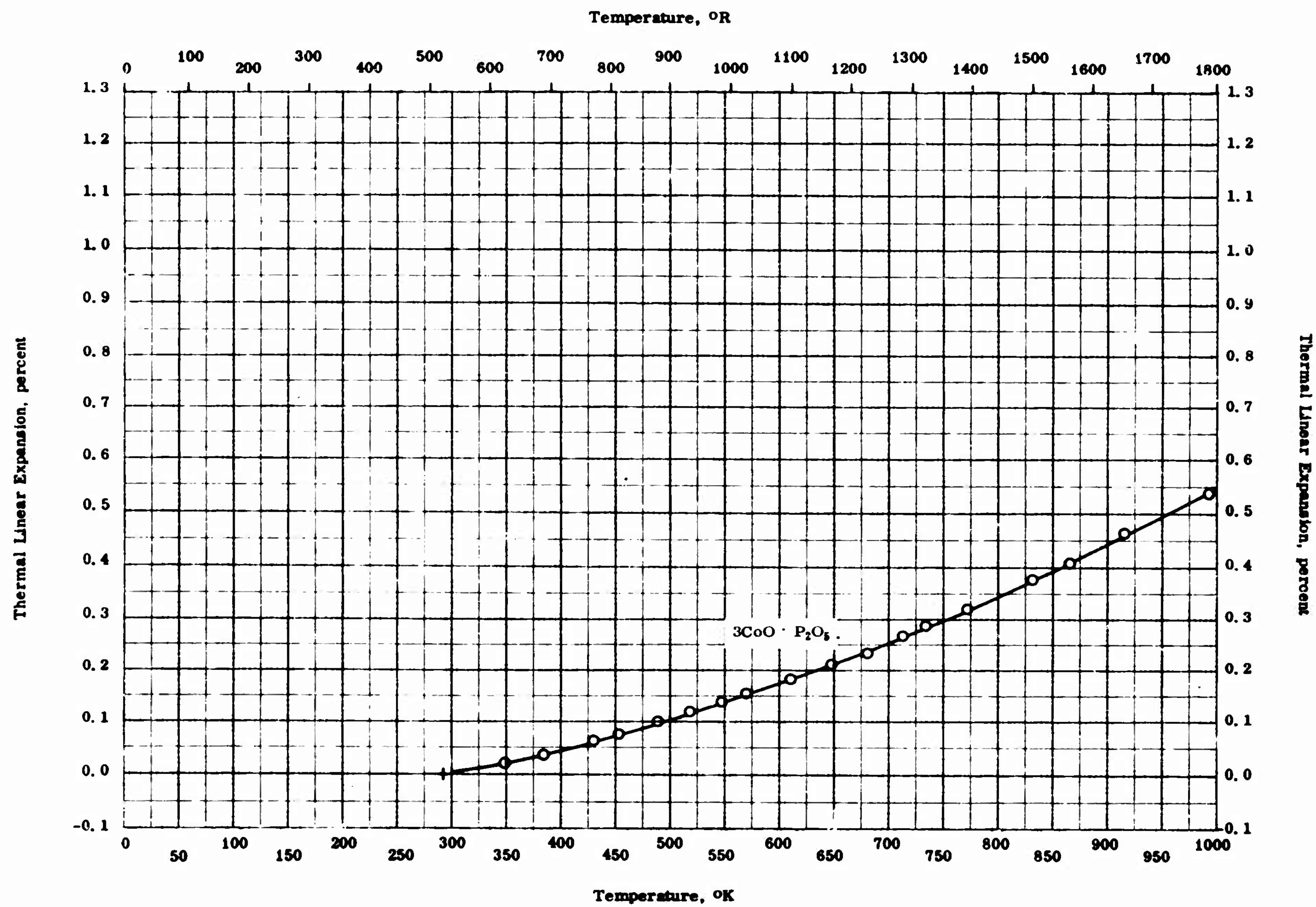


THERMAL LINEAR EXPANSION -- ZINC GERMANIUM OXIDE

THERMAL LINEAR EXPANSION -- ZINC GERMANIUM OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	64-19	293-1303		$2ZnO \cdot GeO_2$; 60.88 ZnO and 39.12 GeO_2; prepared from c.p. grade ZnO and GeO_2. [Author's design : Sample B1]	ZnO and GeO_2 mixed together, dried, and heat treated; measured along a-axis by x-ray diffraction.
□	64-19	293-1303		Same as above.	Same as above except measured along c-axis.
△	64-19	293-1257		Same as above.	ZnO and GeO_2 mixed together, dried, pressed into 1 cm by 1 cm by 10 cm bars at 500 psi, and heat treated; aggregate expansion measured with heating rate of 125 C hr^{-1}.

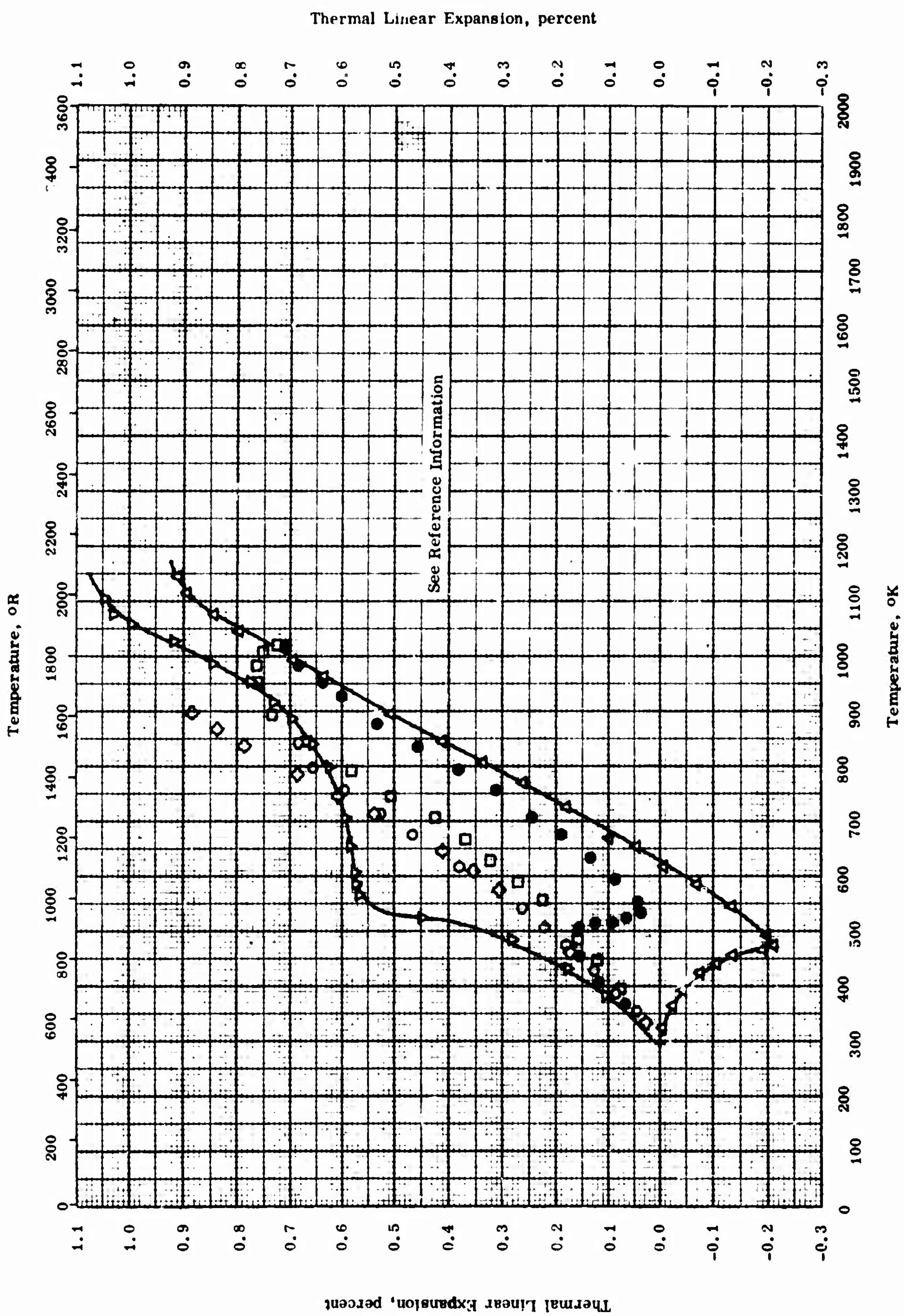


THERMAL LINEAR EXPANSION -- COBALT ORTHOPHOSPHATE

THERMAL LINEAR EXPANSION -- COBALT ORTHOPHOSPHATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-39	293-992	2	$3CoO \cdot P_2O_5$; dimensions 4 in. long by 7/16 in. square.	Prepared by treating a solution of cobalt nitrate with sodium hydrophosphate, heated the resulting violet flakes to 400 C in a hydrogen atm for 2 hrs, mixed with 15% binder solution (40 g Carbowax 20 M, 20 cc methocel solution and 40 cc H_2O), pressed at 5000 psi, and fired at 900 C for 2 hrs; measured with heating rate of 2 C min^{-1}.



THERMAL LINEAR EXPANSION -- LEAD PHOSPHATES

THERMAL LINEAR EXPANSION -- LEAD PHOSPHATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-39	298-840		$PbO \cdot P_2O_5$; 61.12 PbO and 38.88 P_2O_5; prepared from c.p. lead carbonate and diammonium hydrogen phosphate; original length 110.3 mm.	Hand-mixed with acetone for 15 to 20 min, air dried overnight, calcined at 200 C for 4 hrs, fired at 550 C for 6 hrs, cooled, ground, remixed, pressed into pellets (1 cm diameter by 1 cm long) at 1000 psi, fired at 550 C for 12 hrs so that complete reaction occured, ground, mixed with Carbowax solution, forced through 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and sintered to a relatively dense condition; measured with heating rate of 120 C hr^{-1}.
□	60-39	298-1018		$2\,PbO \cdot P_2O_5$; 75.89 PbO and 24.11 P_2O_5; prepared from c.p. lead carbonate and diammonium hydrogen phosphate; original length 83.0 mm.	Hand-mixed with acetone for 15 to 20 min, air dried overnight, calcined at 200 C for 24 hrs, fired at 800 C for 6 hrs, cooled, ground, remixed, pressed into pellets (1 cm diameter by 1 cm long) at 1000 psi, fired at 800 C for 24 hrs so that complete reaction occured, ground, mixed with Carbowax solution, forced through 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and sintered to a relatively dense condition; measured with heating rate of 120 C hr^{-1}.

(continued onto next page)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
△	60-39	301-1144		3 PbO · P_2O_5; 82.50 PbO and 17.50 P_2O_5; prepared from c.p. lead carbonate and diammonium hydrogen phosphate; original length 97.6 mm.	Hand-mixed with acetone for 15 to 20 min, air dried overnight, calcined at 200 C for 4 hrs, fired at 950 C for 6 hrs, cooled, ground, remixed, pressed into pellets (1 cm diameter by 1 cm long) at 1000 psi, fired at 950 C for 24 hrs so that complete reaction occured, ground, mixed with Carbowax solution, forced through 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and sintered to a relatively dense condition; measured with heating rate of 120 C hr^{-1}; author states that data indicates a reversible inversion.
◇	60-39	298-898		3 PbO · $2P_2O_5$; 70.22 PbO and 29.78 P_2O_5; prepared from c.p. lead carbonate and diammonium hydrogen phosphate; original length 110.4 mm.	Hand-mixed with acetone for 15 to 20 min, air dried overnight, calcined at 200 C for 4 hrs, fired at 650 C for 6 hrs, cooled, ground, remixed, pressed into pellets (1 cm diameter by 1 cm long) at 1000 psi, fired at 650 C for 24 hrs so that complete reaction occured, ground, mixed with Carbowax solution, forced through 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and sintered to a relatively dense condition; measured with heating rate of 120 C hr^{-1}.

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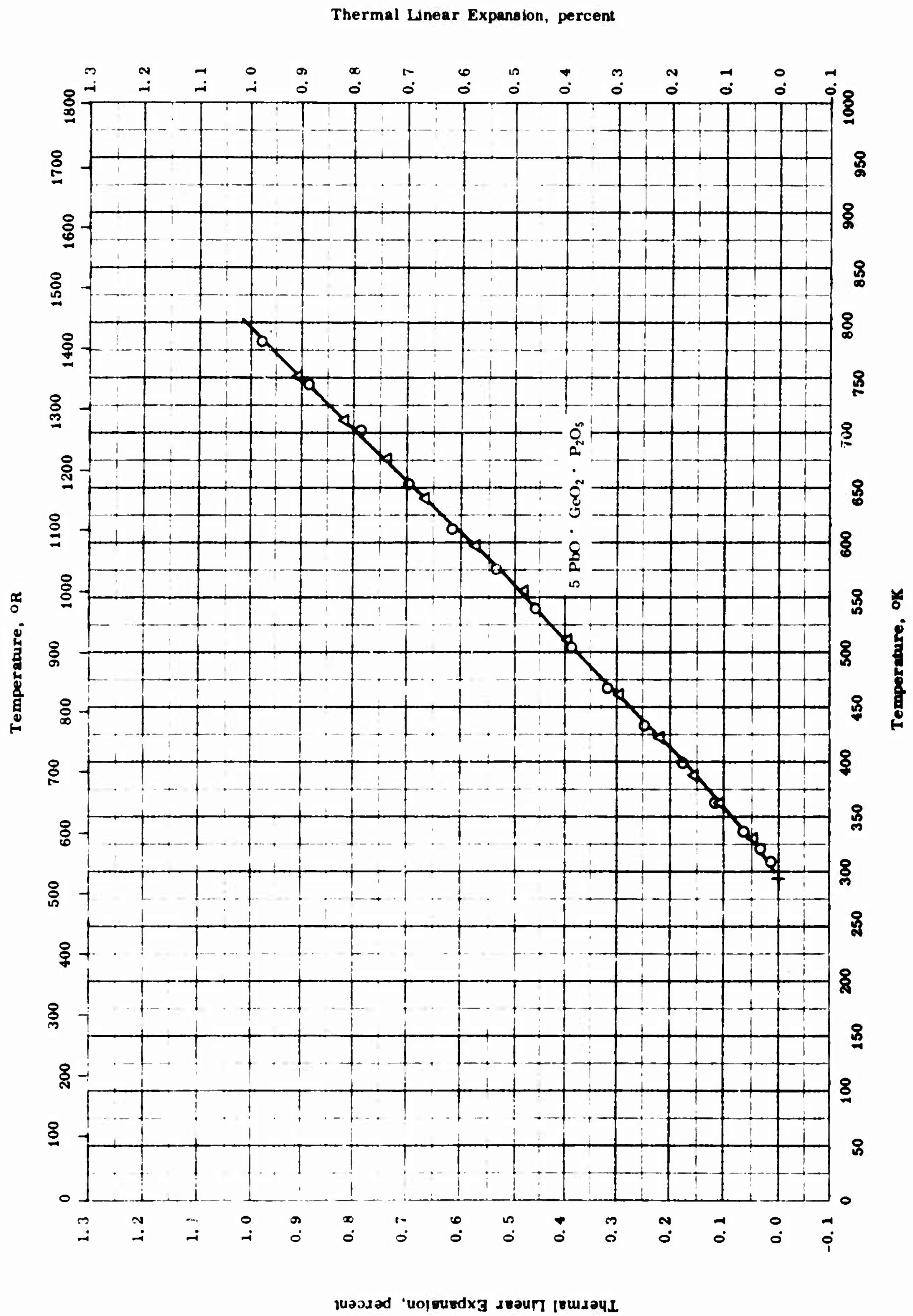
THERMAL LINEAR EXPANSION -- LEAD PHOSPHATES (Continued)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▽	60-39	298-1101		5 PbO· $2P_2O_5$; 79.72 PbO and 20.28 P_2O_5; prepared from c.p. lead carbonate and diammonium hydrogen phosphate; original length 98.5 mm.	Hand-mixed with acetone for 15 to 20 min, air dried overnight, calcined at 200 C for 4 hrs, fired at 900 C for 6 hrs, cooled, ground, remixed, pressed into pellets (1 cm diameter by 1 cm long) at 1000 psi, fired at 900 C for 24 hrs so that complete reaction occured, ground, mixed with Carbowax solution, forced through 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and sintered to a relatively dense condition; measured with heating rate of 120 C hr^{-1}; author states that data indicates an inversion or discontinuity.
●	60-39	298-1018		8 PbO· P_2O_5; 92.15 PbO and 7.85 P_2O_5; prepared from c.p. lead carbonate and diammonium hydrogen phosphate; original length 98.5 mm.	Hand-mixed with acetone for 15 to 20 min, air dried overnight, calcined at 200 C for 4 hrs, fired at 800 C for 6 hrs, cooled, ground, remixed, pressed into pellets (1 cm diameter by 1 cm long) at 1000 psi, fired at 800 C for 24 hrs so that complete reaction occured, ground, mixed with Carbowax solution, forced through 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and sintered to a relatively dense condition; measured with heating rate of 120 C hr^{-1}; author states that data indicates an inversion or discontinuity.

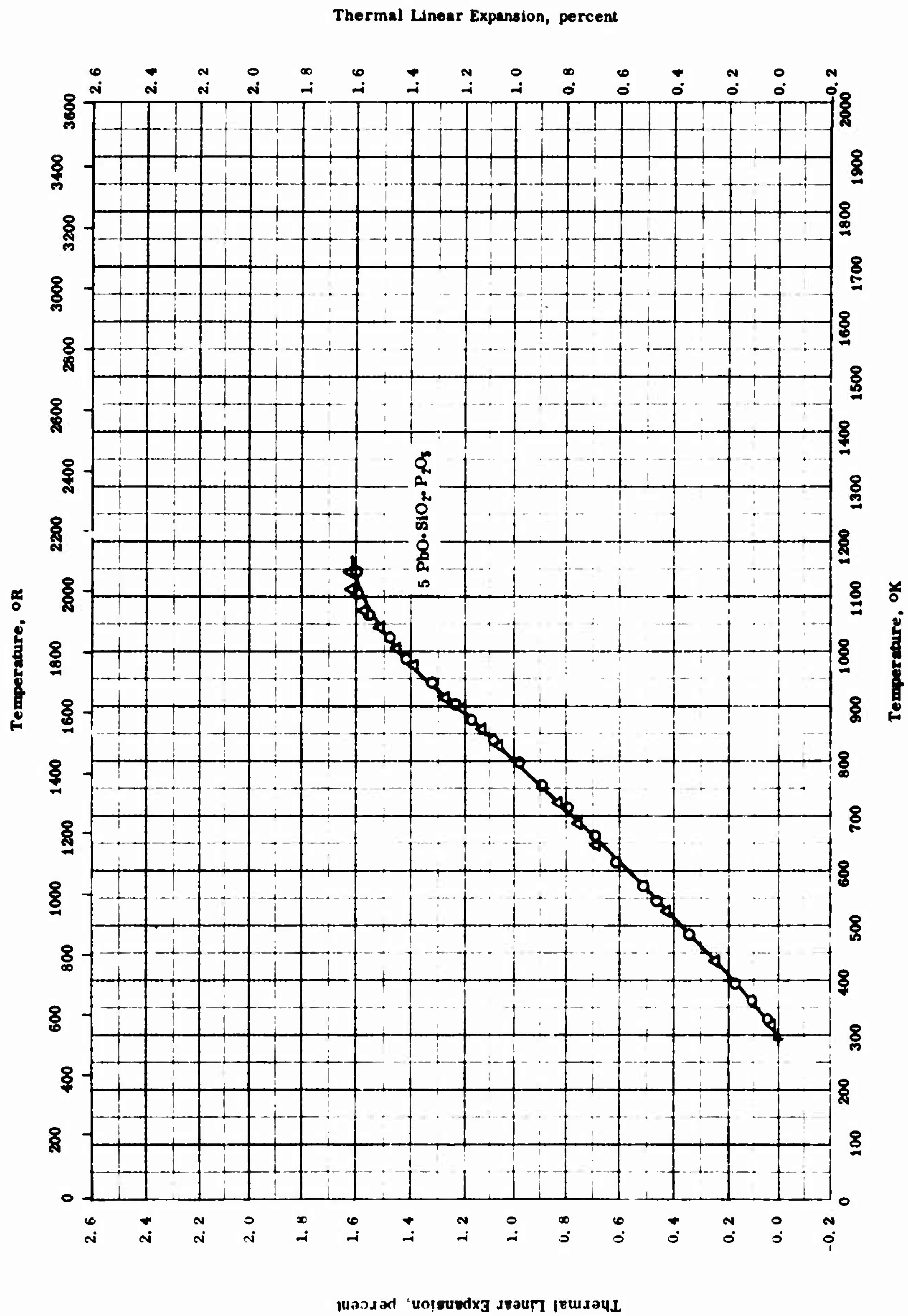


THERMAL LINEAR EXPANSION -- LEAD GERMANIUM PHOSPHATE

THERMAL LINEAR EXPANSION -- LEAD GERMANIUM PHOSPHATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-38	298-783		5 PbO · GeO_2 · P_2O_5; calculated composition 81.91 PbO, 10.42 P_2O_5, and 7.68 GeO_2; prepared from c.p. chemicals; original length 102.2 mm; melting temperature 995 C.	Hand-mixed with acetone for 15 to 20 min, air dried, heated slowly to 300 C for 4 hrs, remixed, calcined at 450 C for 24 hrs, cooled, remixed, recalcined at 700 C for 24 hrs, ground, mixed with carbowax solution, nodulized through a 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and fired slowly to 510 C for 6 hrs; measured with heating rate of 120 C hr^{-1}.
△	63-38	298-751		Same as above.	Second run for above sample.

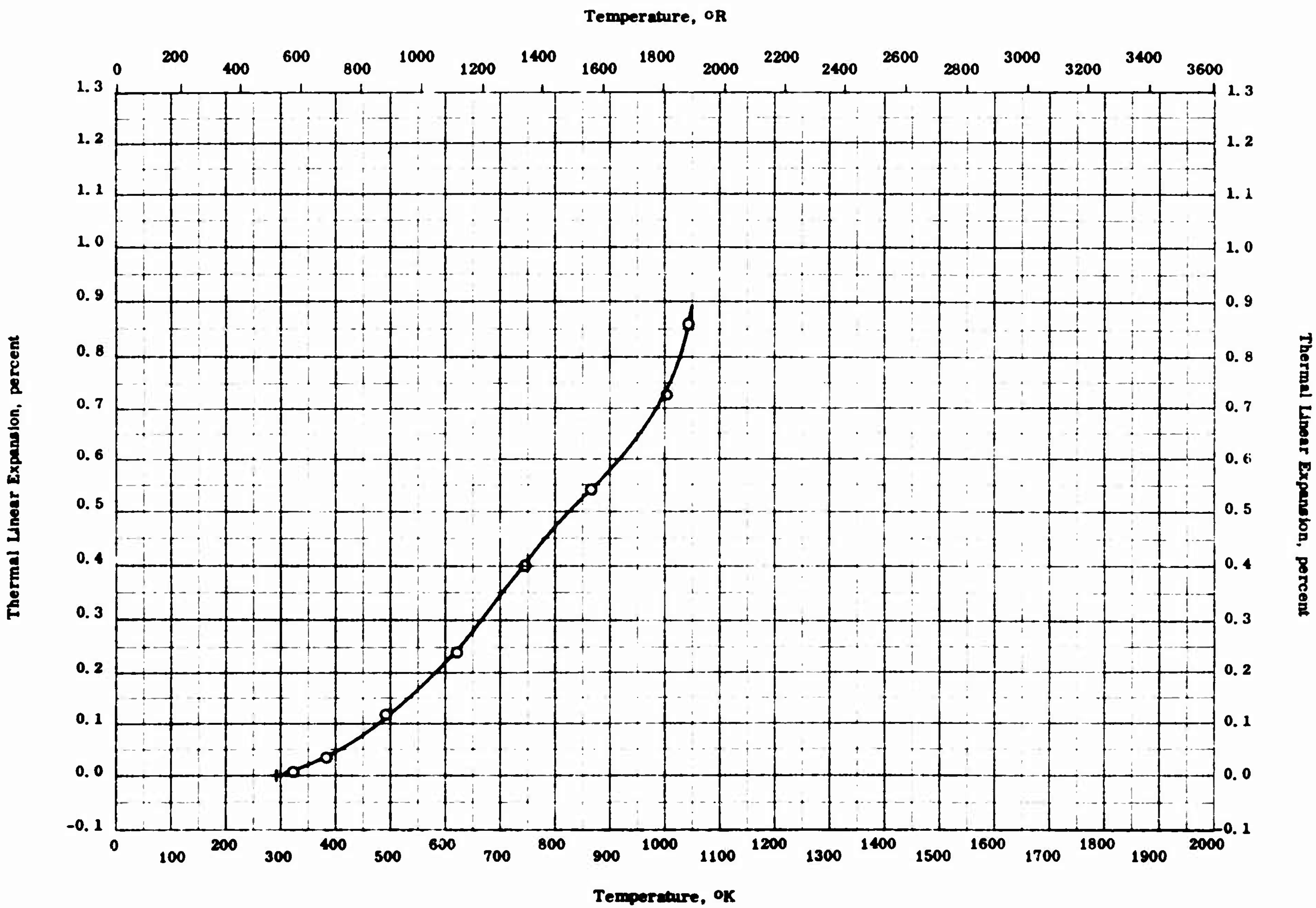


THERMAL LINEAR EXPANSION -- LEAD SILICON PHOSPHATE

THERMAL LINEAR EXPANSION -- LEAD SILICON PHOSPHATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-39	298-1145		5 $PbO \cdot SiO_2 \cdot P_2O_5$; 84.67 PbO, 10.77 P_2O_5, and 4.56 SiO_2; prepared from c.p. lead carbonate, silicic acid, and diammonium hydrogen phosphate; original length 97.5 mm.	Hand-mixed with acetone for 15 to 20 min, air dried overnight, calcined at 200 C for 4 hrs, fired to 950 C for 6 hrs, cooled, ground, remixed, fired to 950 C for 24 hrs, ground, mixed with Carbowax solution, forced through 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and sintered to a relatively dense condition; measured with heating rate of 120 C hr^{-1}.
△	60-39	298-1145		Same as above.	Second run for above sample.

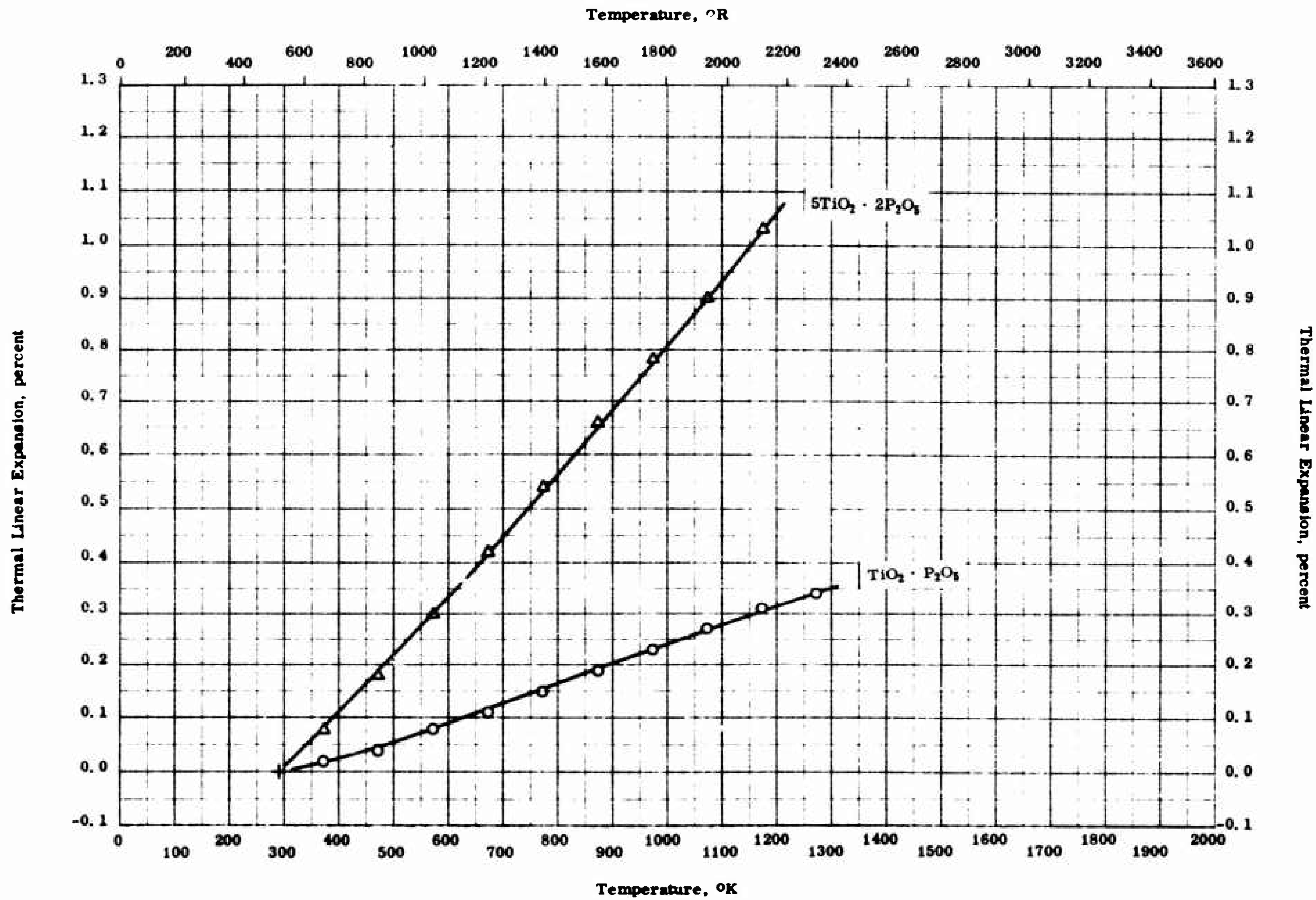


THERMAL LINEAR EXPANSION -- TIN (OUS) ORTHOPHOSPHATE

THERMAL LINEAR EXPANSION -- TIN (OUS) ORTHOPHOSPHATE

REFERENCE INFORMATION

Symbol	Ref	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	59-18	293-1049	2	$3SnO \cdot P_2O_5$; x-ray analysis indicated mainly $3SnO \cdot P_2O_5$ with small amounts of $SnSO_4$ and $Na_4P_2O_7$; dimensions 4 in. long by 7/16 in. square.	10 solution of sodium hydrophosphate poured into saturated solution of stannous sulphate (1:10) acidified with H_2SO_4, precipitate washed with hot water, boiled with water, washed with alcohol and ether, dried over P_2O_5, mixed with 15 binder solution (40 g Carbowax 20 M, 20 cc Methocel solution and 40 cc H_2O), pressed at 5000 psi, and fired at 1100 C for 2 hrs; measured with heating rate of 2 C min^{-1}.

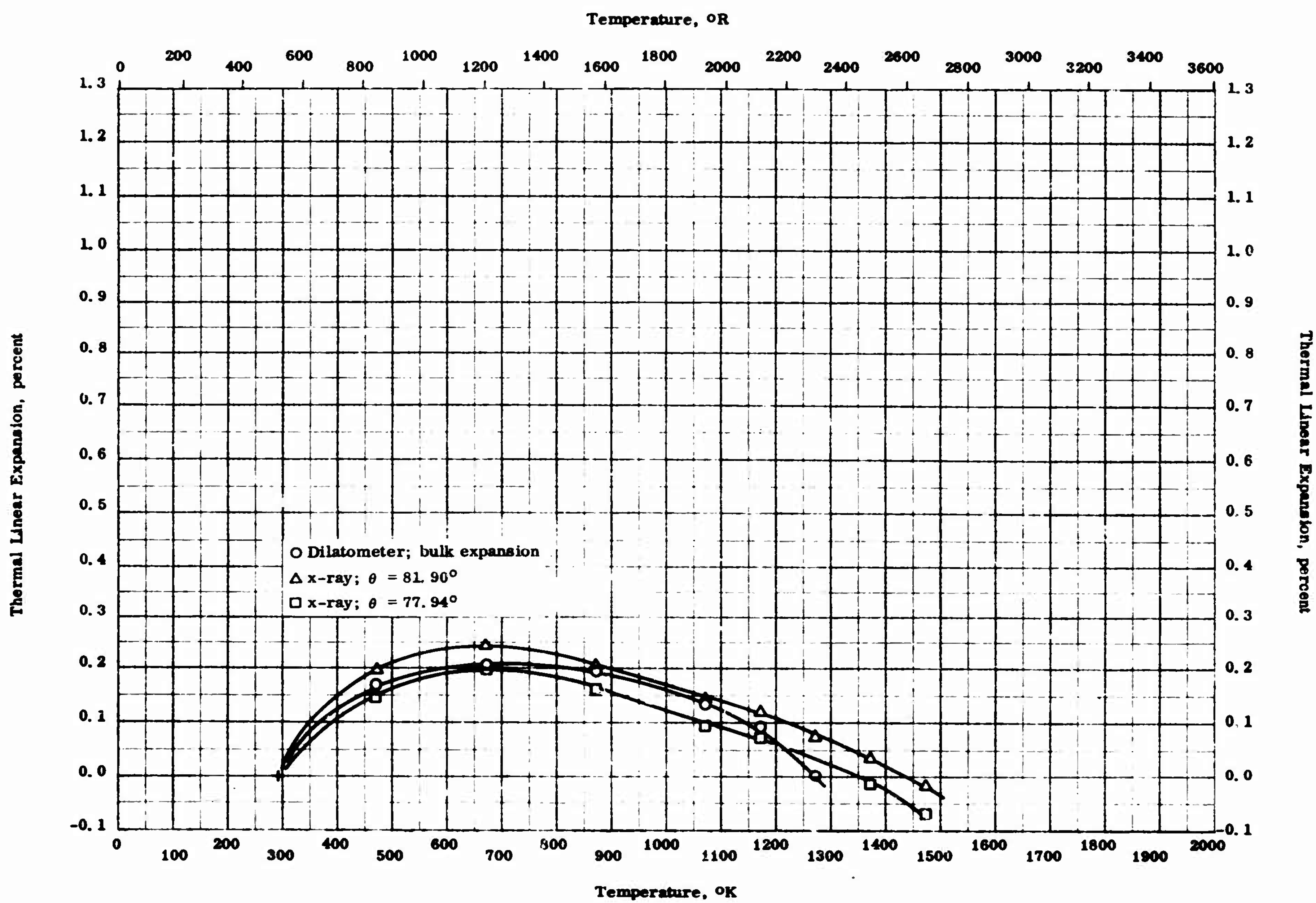


THERMAL LINEAR EXPANSION -- TITANIUM PHOSPHATES

THERMAL LINEAR EXPANSION -- TITANIUM PHOSPHATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-21	293-1273		$TiO_2 \cdot P_2O_5$; 36.3 TiO_2 and 63.7 P_2O_5 (by diff.).	Prepared by mixing TiO_2 and orthophosphoric acid in a ball mill for 24 hrs, dried at 110 C, calcined at 1000 C for 24 hrs, ground, dry pressed, and fired at 1000 C for 12 hrs.
△	59-21	293-1273		$5TiO_2 \cdot 2P_2O_5$; 57.6 TiO_2 and 42.4 P_2O_5 (by diff.); anisotropic; melts at 1260 C.	Same as above except fired at 1000 C for 15 hrs.

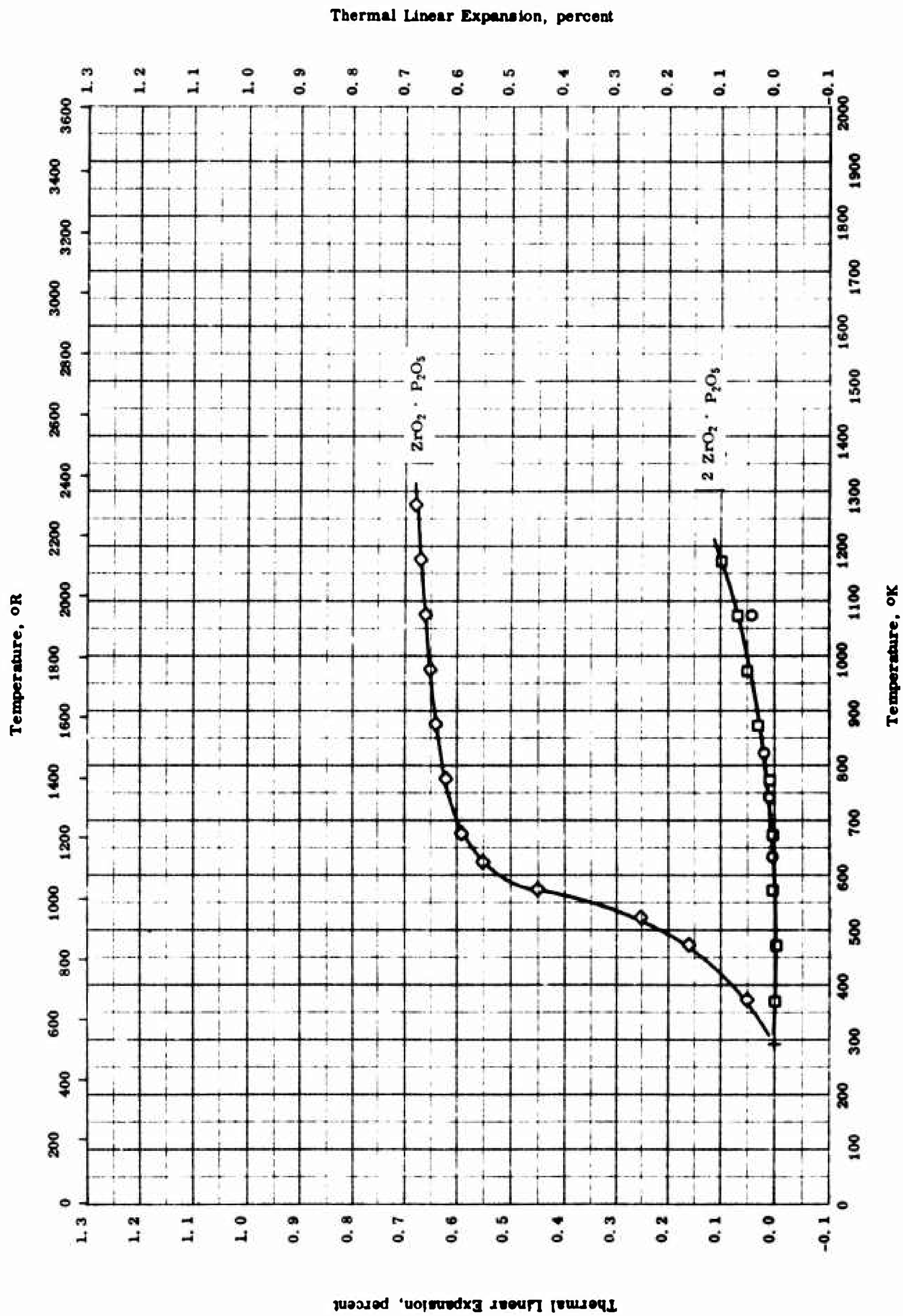


THERMAL LINEAR EXPANSION -- URANIUM PHOSPHATE

THERMAL LINEAR EXPANSION -- URANIUM PHOSPHATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-36	302-1273	2	UP_2O_7; x-ray analysis indicated the presence of cubic UP_2O_7 with a possible trace of orthorhombic UP_2O_7; dimensions 4-3/8 in. long by 7/16 in. square.	$(NH_4)_2HPO_4$ and $UO_2(NO_3)_2 \cdot 6H_2O$ mixed in a 2:1 ratio, heated in a porcelain dish over a bunsen burner for 5 hrs, reheated in a muffle kiln to 970 C for 6 hrs, ground to pass a 100 mesh screen, mixed with 15 binder (40 g Carbowax 20 M, 20 cc of 2 Methocel solution and 40 cc H_2O), dried, pressed at 900 psi, and fired to 1100 C for 3 hrs; measured in a dilatometer with heating rate of 3 C min^{-1}.
△	60-36	302-1473		Same as above.	Same as above except measured by x-ray method based on (11, 1, 1) line at θ = 81.90°.
□	60-36	302-1473		Same as above.	Same as above except based on (10, 4, 2) line at θ = 77.94°.

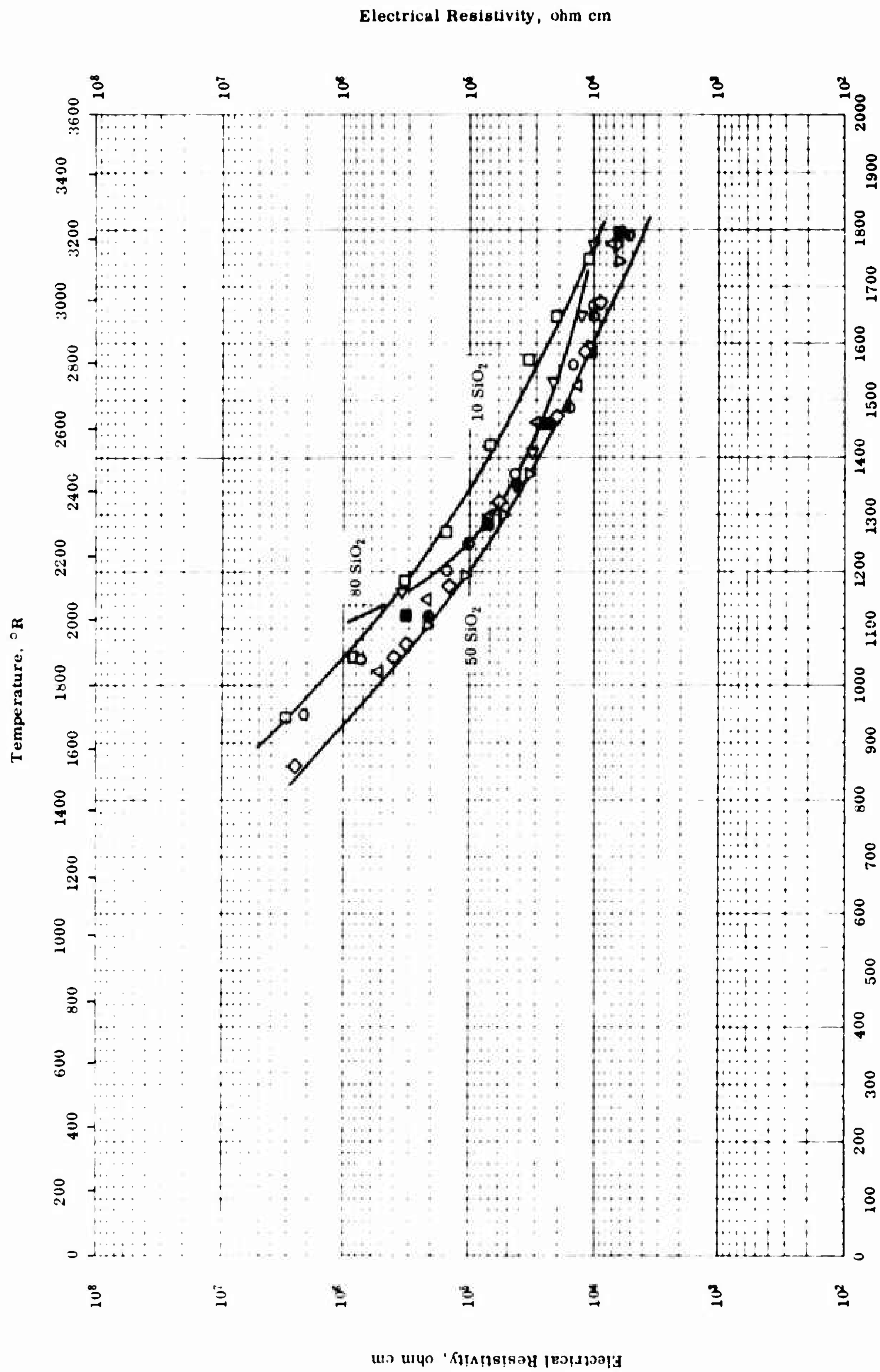


THERMAL LINEAR EXPANSION -- ZIRCONIUM PHOSPHATES

THERMAL LINEAR EXPANSION -- ZIRCONIUM PHOSPHATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	54-35	293-1173		2 $ZrO_2 \cdot P_2O_5$; 63.4 ZrO_2 and 36.6 P_2O_5.	Compound calcined 4 hrs at 1550 C.
◇	54-35	293-1273		$ZrO_2 \cdot P_2O_5$; 46.5 ZrO_2 and 53.5 P_2O_5.	Compound calcined 10 hrs at 1380 C.
○	46-6	293-1073		Zirconium phosphate.	Calcined at 1400 C.

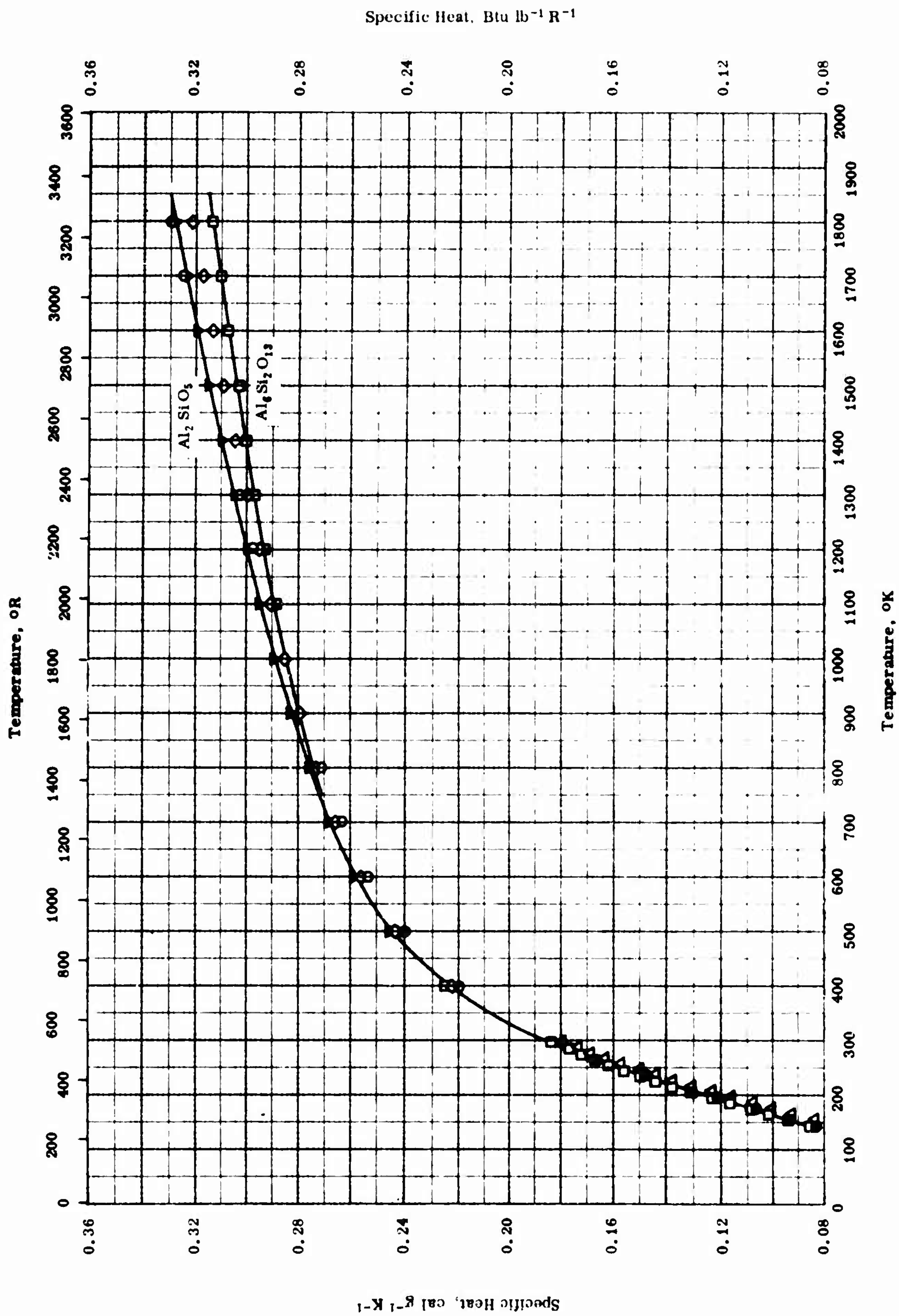


ELECTRICAL RESISTIVITY -- ALUMINUM SILICATES
(Mineral aluminum silicates)

ELECTRICAL RESISTIVITY -- ALUMINUM SILICATES
(Mineral aluminum silicates)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	53-17	943-1753		90 Al_2O_3 and 10 SiO_2; 35-37% porosity.	Prepared from acid leached pottery flint and acid treated Al_2O_3; sintered and fired 10 hrs at 1500 C.
△	53-17	1023-1783		80 Al_2O_3 and 20 SiO_2; 35-37% porosity.	Same as above.
◇	53-17	863-1783		70 Al_2O_3 and 30 SiO_2; 35-37% porosity.	Same as above.
○	53-17	853-1663		60 Al_2O_3 and 50 SiO_2; 35-37% porosity.	Same as above.
▽	53-17	1103-1743		50 Al_2O_3 and 50 SiO_2; 35-37% porosity.	Same as above.
◓	53-17	998-1793		60 SiO_2. 40 Al_2O_3; 35-37% porosity.	Same as above.
■	53-17	1123-1783		70 SiO_2, 30 Al_2O_3; 35-37% porosity.	Same as above.
◁	53-17	1163-1773		80 SiO_2. 20 Al_2O_3; 35-37% porosity.	Same as above.

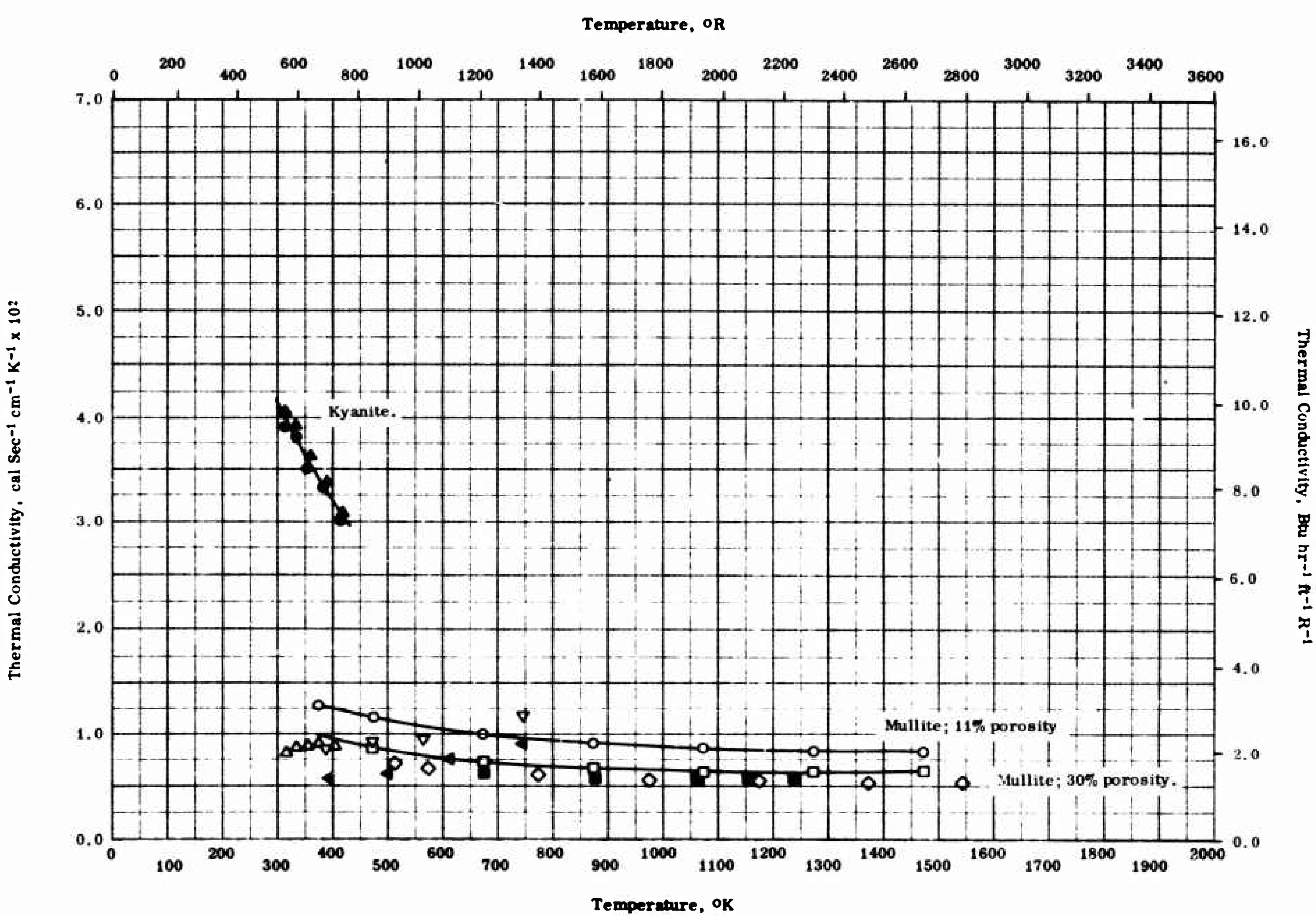


SPECIFIC HEAT -- ALUMINUM SILICATES

SPECIFIC HEAT -- ALUMINUM SILICATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error	Sample Specifications	Remarks
○	64-14	400-1800	0.3	Sillimanite, $Al_2O_3 \cdot SiO_2$; 61.80 Al_2O_3, 36.44 SiO_2, 0.98 Fe_2O_3, 0.28 P_2O_5, 0.24 MgO, 0.14 FeO, 0.07 CaO, 0.04 F, 0.04 MnO, and 0.01> Na_2O; contained Wagnerite ($MgF \cdot MgPO_4$) inclusion; sample from Benson Mines, New York.	
□	63-30	53-1800	0.3	Mullite, $3\ Al_2O_3 \cdot 2\ SiO_2$; 71.69 Al_2O_3 and 28.22 SiO_2.	Prepared by heating stoichiometric mixture of Al_2O_3 and SiO_2 for 12 days at 1500 C to 1540 C.
△	50-12	55-298		Kyanite; 63.2 Al_2O_3, 36.90 SiO_2, 0.10 Fe_2O_3, and 0.05 CaO.	
◇	64-14	400-1800	0.3	Andalusite, $Al_2O_3 \cdot SiO_2$. 63.15 Al_2O_3, 36.84 SiO_2, 0.11 Fe_2O_3, 0.02 CaO, 0.01> MgO, 0.01> MnO, and 0.01> TiO_2; contained a few Muscovite [$K\ Al_3Si_3O_{10}(OH)_2$] inclusion; sample from Standish, Main.	
▽	64-14	400-1800	0.3	Kyanite, $Al_2O_3 \cdot SiO_2$; 63.20 Al_2O_3, 36.90 SiO_2, 0.10 Fe_2O_3, and 0.05 CaO; sample from Burnsville, North Carolina.	
●	50-12	55-298		Andalusite; 63.15 Al_2O_3, 36.84 SiO_2; 0.11 Fe_2O_3, 0.02 CaO, and 0.01 each TiO_2, MgO, MnO.	
■	50-12	55-298		Sillimanite; 61.8 Al_2O_3, 36.44 SiO_2, 0.98 Fe_2O_3, 0.28 P_2O_5, 0.24 MgO, 0.14 FeO; 0.07 CaO, 0.04 each MnO, F, and < 0.01 N_2O.	

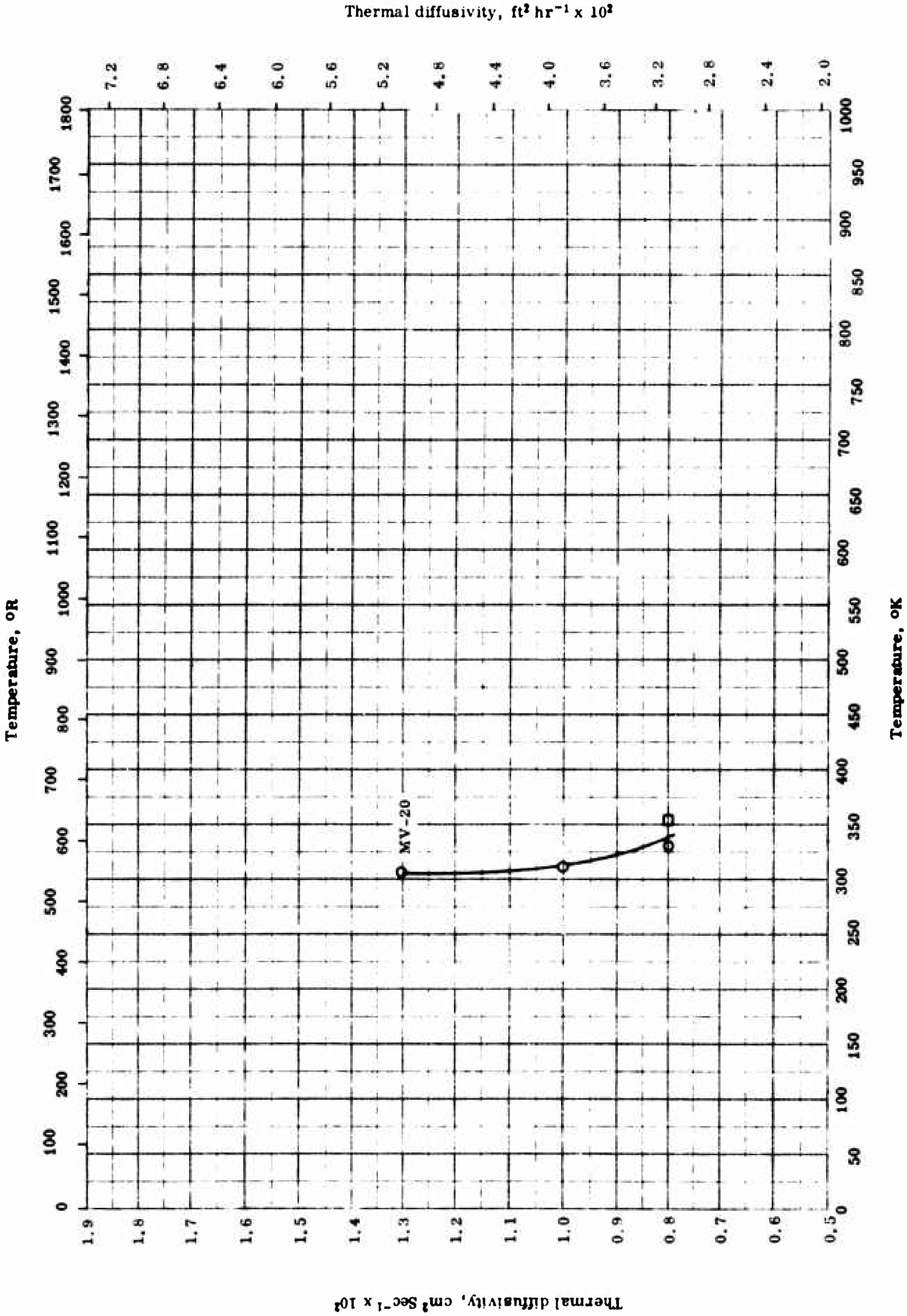


THERMAL CONDUCTIVITY -- ALUMINUM SILICATE

THERMAL CONDUCTIVITY -- ALUMINUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-1	373-1473		Mullite: 69.0 Al_2O_3 and 31.9 SiO_2 (sic); theoretical density 197 lb ft^{-3}, bulk density 174 lb ft^{-3}, and porosity 11.4%.	
□	54-1	473-1473		Mullite; 69.0 Al_2O_3 and 31.9 SiO_2; theoretical density 197 lb ft^{-3}, bulk density 138 lb ft^{-3}, and porosity 29.8%.	
△	54-8	315-402		$3Al_2O_3 \cdot 2SiO_2$ (mullite).	
◇	51-4	511-1545	± 8	$3Al_2O_3 \cdot 2SiO_2$ (mullite); polycrystalline.	Grind 24 hr, electromagnetic separation and HCl treatment; dense pieces fired at 1780 C.
▽	43-1	389-745		Same as above.	Electrocast, needles well aligned; meas. parallel to c-axis.
◀	43-1	389-745		Same as above.	Same as above except meas. perpendicular to c-axis.
■	57-5	678-1239		Mullite brick.	
●	54-8	315-417	± 3	$Al_2O_3 \cdot SiO_2$ (Kyanite); single crystal of triclinic crystal system.	Measured in the direction of b-axis.
▲	54-8	316-419	± 3	Same as above.	Measured in the direction of c-axis.

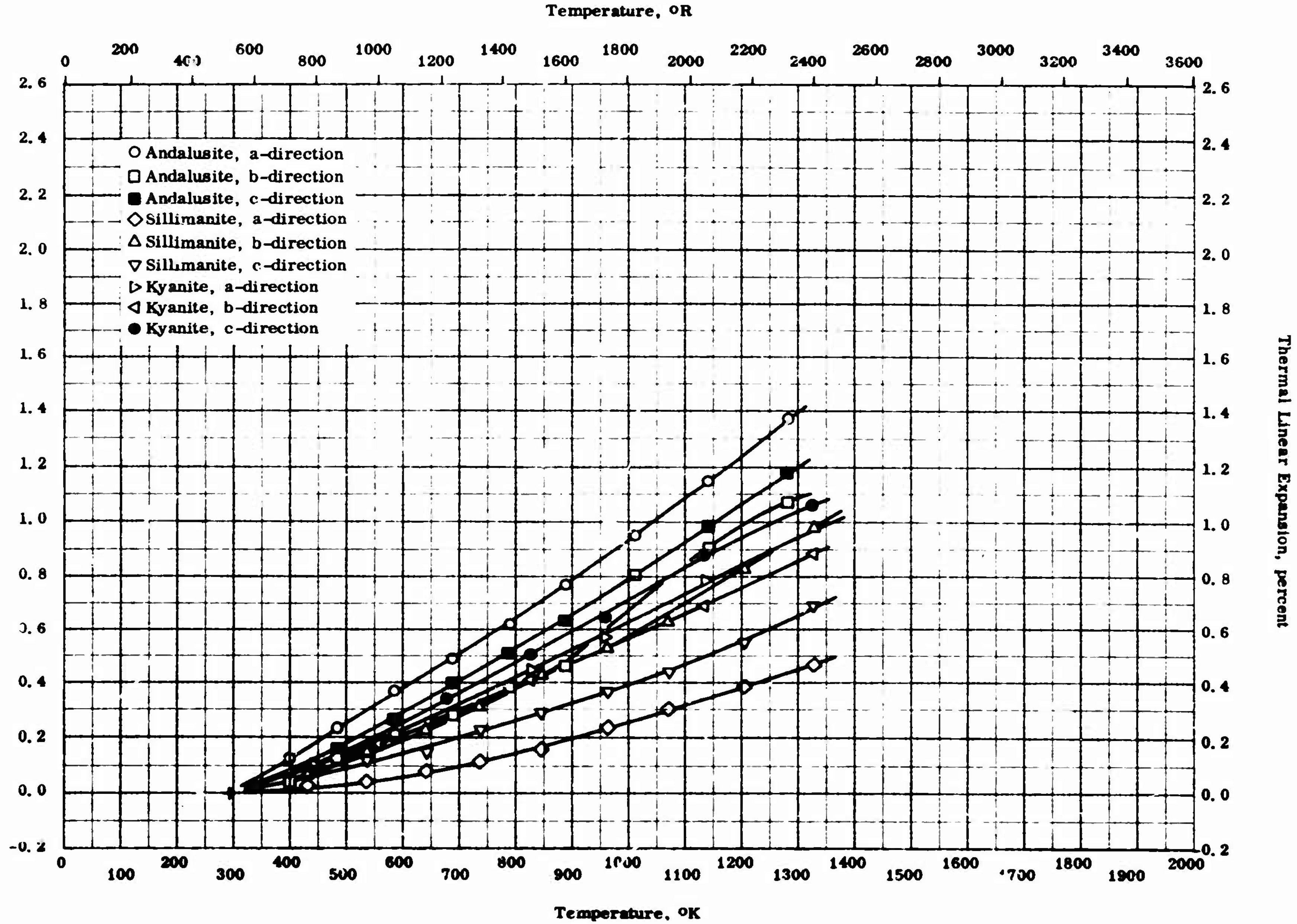


THERMAL DIFFUSIVITY -- ALUMINUM SILICATE
(Mullite)

THERMAL DIFFUSIVITY -- ALUMINUM SILICATE
(Mullite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	51-1	307-331		Mullite MV 20; vitreous; sample 2.20 cm long and 3 mm in. dia.	Measured in ice water.
□	51-1	355		Same as above.	Measured in hot water.

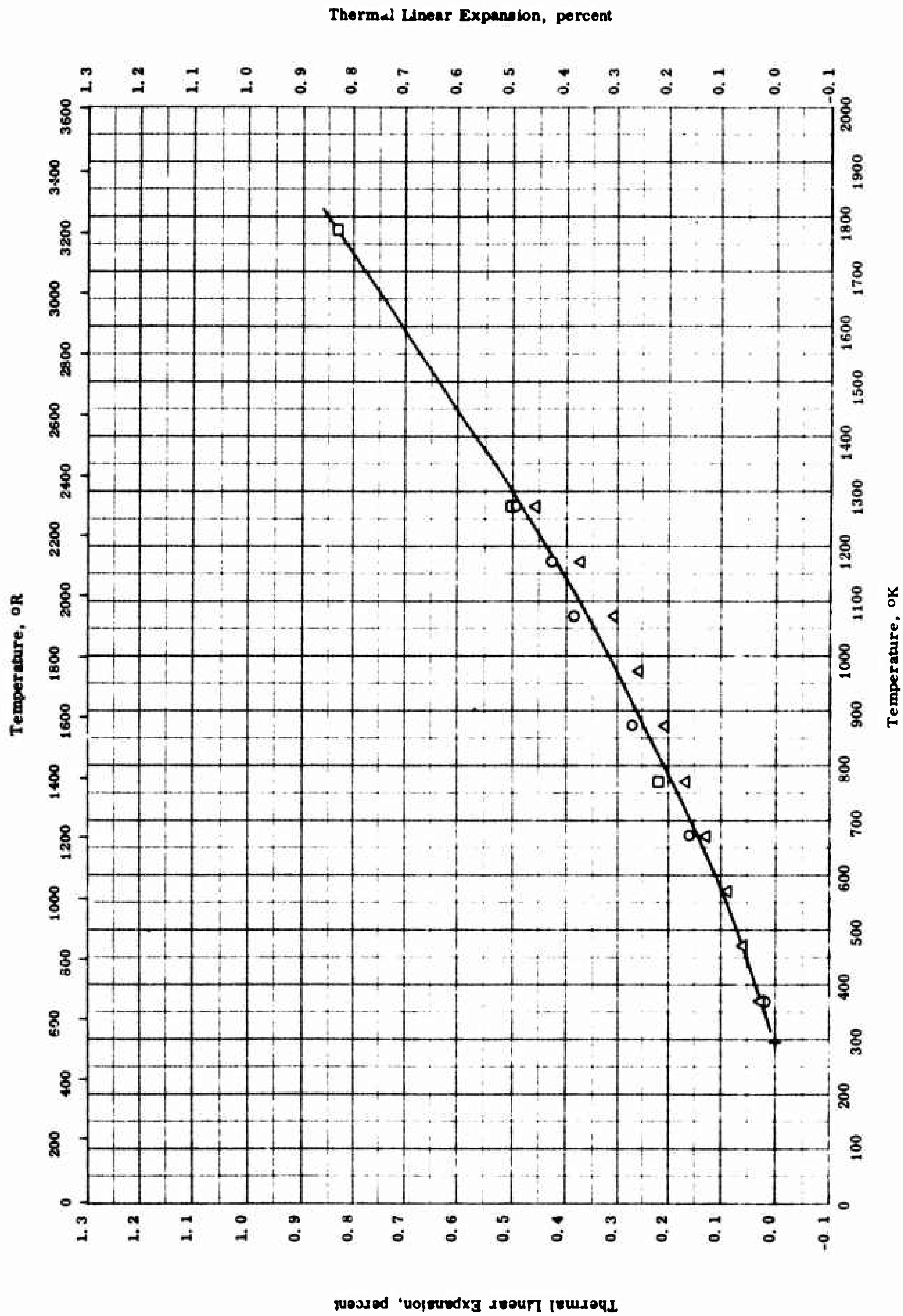


THERMAL LINEAR EXPANSION -- ALUMINUM SILICATES
(Andalusite, Sillimanite, and Kyanite)

THERMAL LINEAR EXPANSION -- ALUMINUM SILICATES
(Andalusite, Sillimanite, and Kyanite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-38	290-1281		$Al_2O_3 \cdot SiO_2$, Andalusite from Minas Gerais, Brazil.	Percent expansion calculated from unit-cell edge measured in a-direction with x-ray diffractometer in vacuo.
□	61-38	290-1281		Same as above.	Same as above except measured in b-direction.
■	61-38	290-1281		Same as above.	Same as above except measured in c-direction.
◇	61-38	293-1328		$Al_2O_3 \cdot SiO_2$, Sillimanite from Williamstown, South Australia.	Percent expansion calculated from unit-cell edge measured in a-direction with x-ray diffractometer in vacuo.
△	61-38	293-1328		Same as above.	Same as above except measured in b-direction.
▽	61-38	293-1328		Same as above.	Same as above except measured in c-direction.
▷	61-38	298-1328		$Al_2O_3 \cdot SiO_2$, Kyanite from Koli, Finland.	Percent expansion calculated from unit-cell edge measured in a-direction with x-ray diffractometer in vacuo.
◁	61-38	298-1328		Same as above.	Same as above except measured in b-direction.
●	61-38	298-1328		Same as above.	Same as above except measured in c-direction.

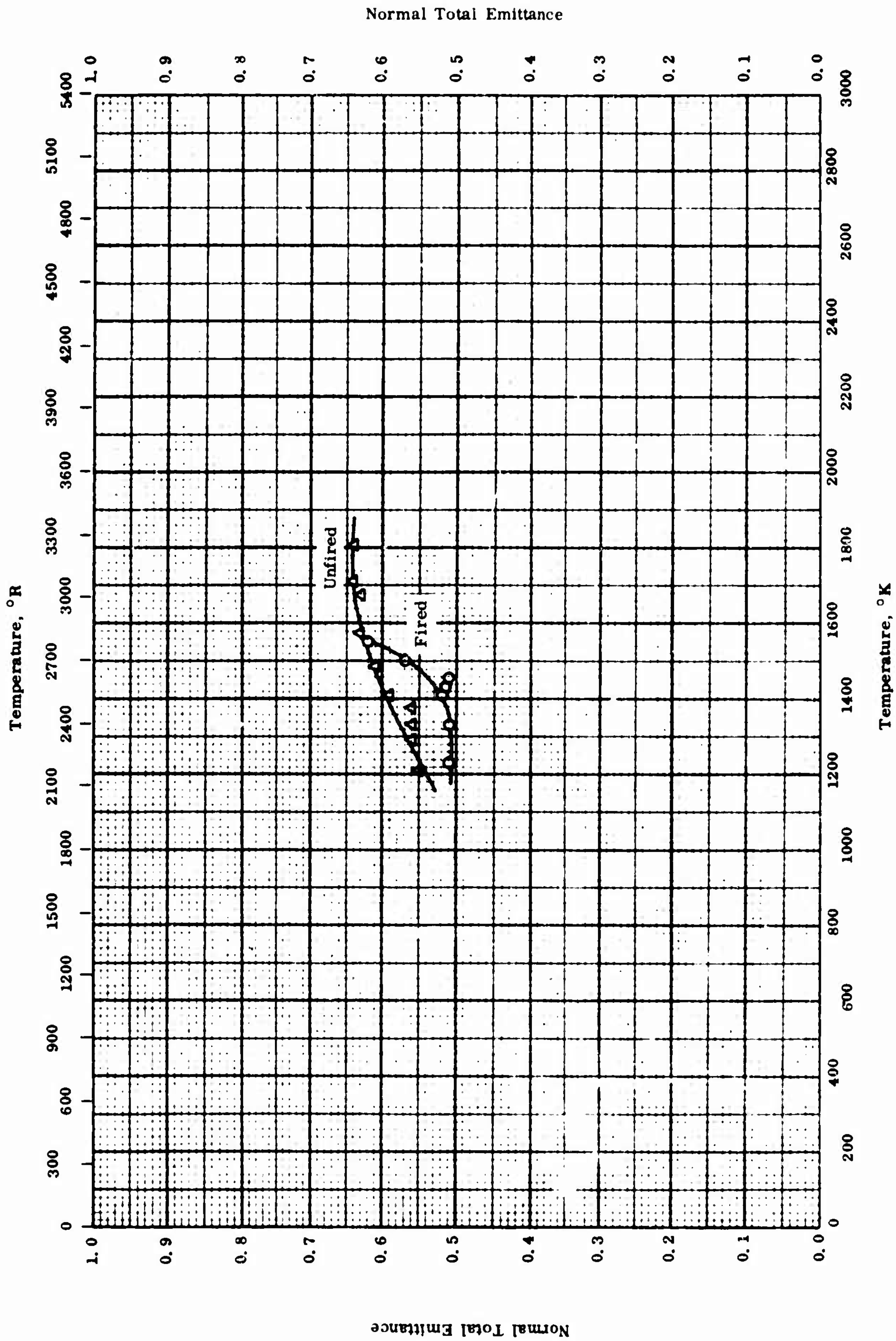


THERMAL LINEAR EXPANSION -- ALUMINUM SILICATE
(Mullite)

THERMAL LINEAR EXPANSION -- ALUMINUM SILICATE
(Mullite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	60-35	298-1773		$3Al_2O_3 \cdot 2SiO_2$.	
△	64-17	298-1273		Mullite, $3Al_2O_3 \cdot 2SiO_2$; dimensions 1/4 in. diameter by 4 in. long.	Prepared fro calcined alumina and -325 mesh SiO_2 wet milled in 3000 g batches for 24 hrs with 4500 g of 1 in. diameter alumina balls in 5-1/2 qt. alumina mills, dried to 200 C, formed into pressing granules using organic binder, dry pressed, fired to 1650 C at average heating rate of about 100 C hr^{-1}, soaked for 3 hrs, and cooled at average rate of about 100 C hr^{-1}.
○	49-7	293-1273		$3Al_2O_3 \cdot 2SiO_2$.	

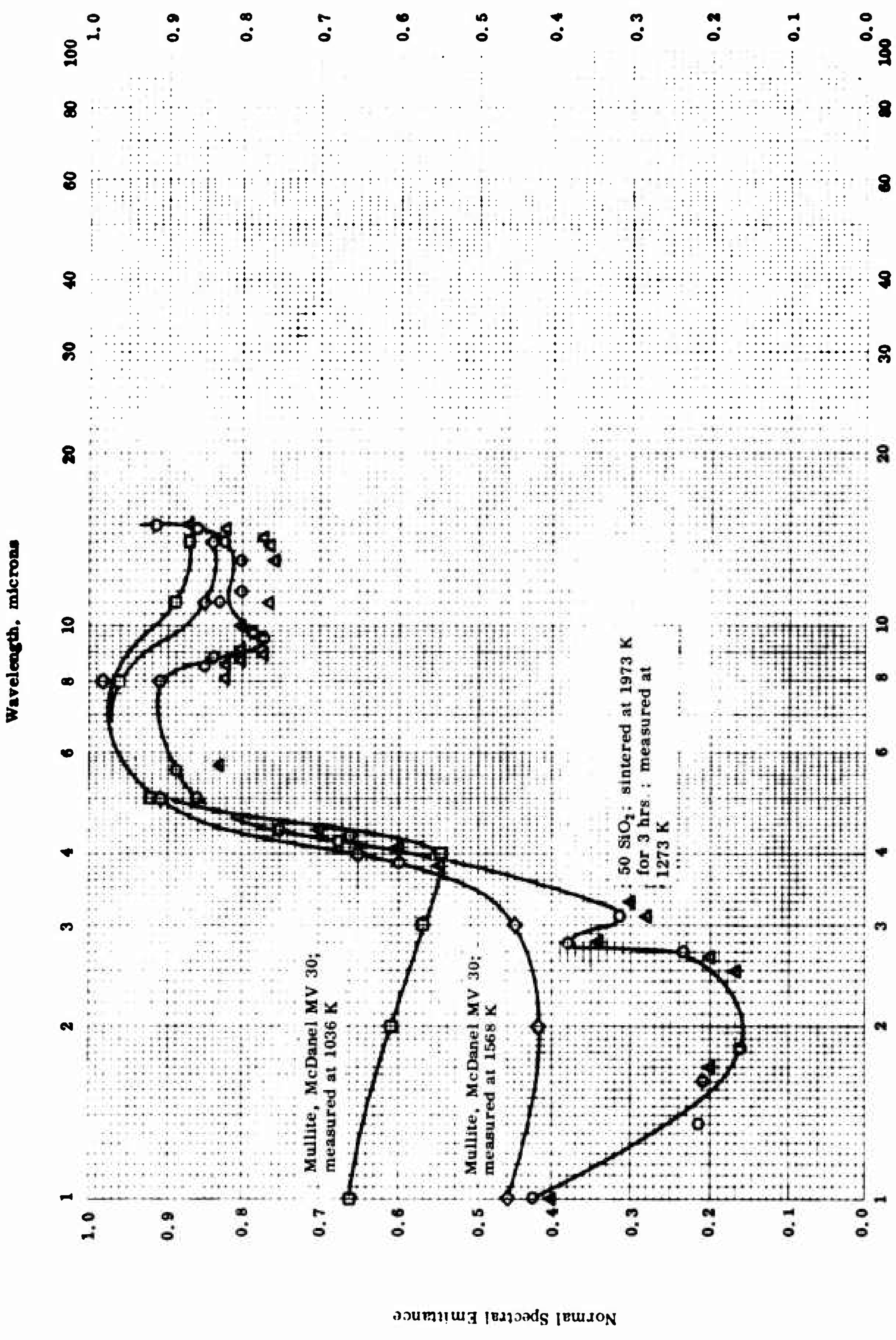


NORMAL TOTAL EMITTANCE -- ALUMINUM SILICATE

NORMAL TOTAL EMITTANCE -- ALUMINUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-35	1228-1553	~1	Sillimanite (25% ball clay binder).	Fired; data taken from smooth curve.
△	55-35	1203-1803	~1	Same as above.	Same as above except before firing.

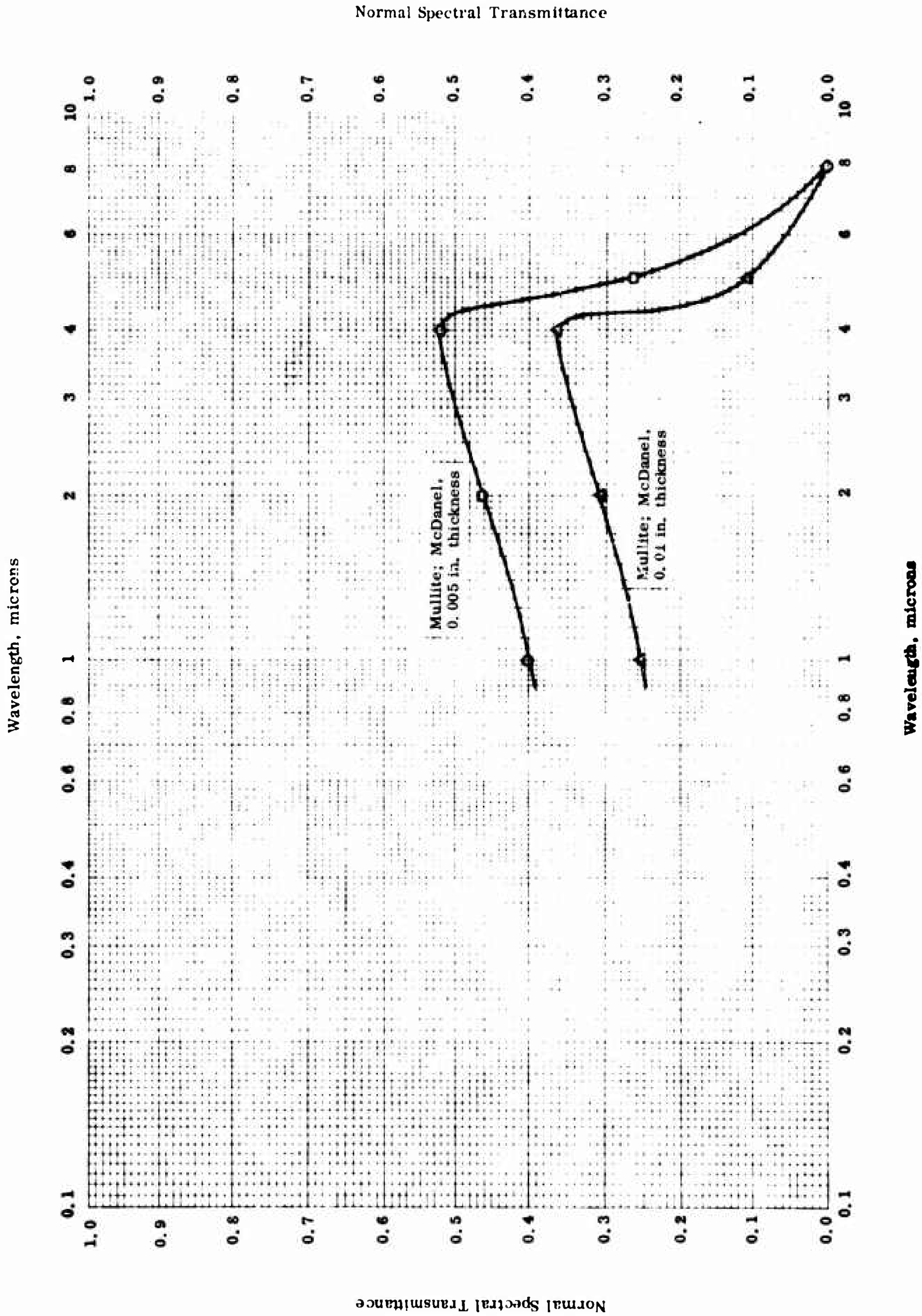


NORMAL SPECTRAL EMITTANCE -- ALUMINUM SILICATE

NORMAL SPECTRAL EMITTANCE -- ALUMINUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range μ	Rept Error%	Sample Specifications	Remarks
□	64-12	1036	1-14	±4	Mullite, McDanel MV 30.	Machined surface.
◇	64-12	1568	1-14	±4	Same as above.	Same as above.
△	62-23	1273	1-15		60 Al_2O_3 and 40 SiO_2, mullite, 0.034 in. thickness plate.	Sintered at 1973 K for 2 hrs; measured in air; data taken from a curve.
○	62-23	1273	1-15		50 Al_2O_3 and 50 SiO_2, mullite, 0.047 in. thickness plate.	Same as above.

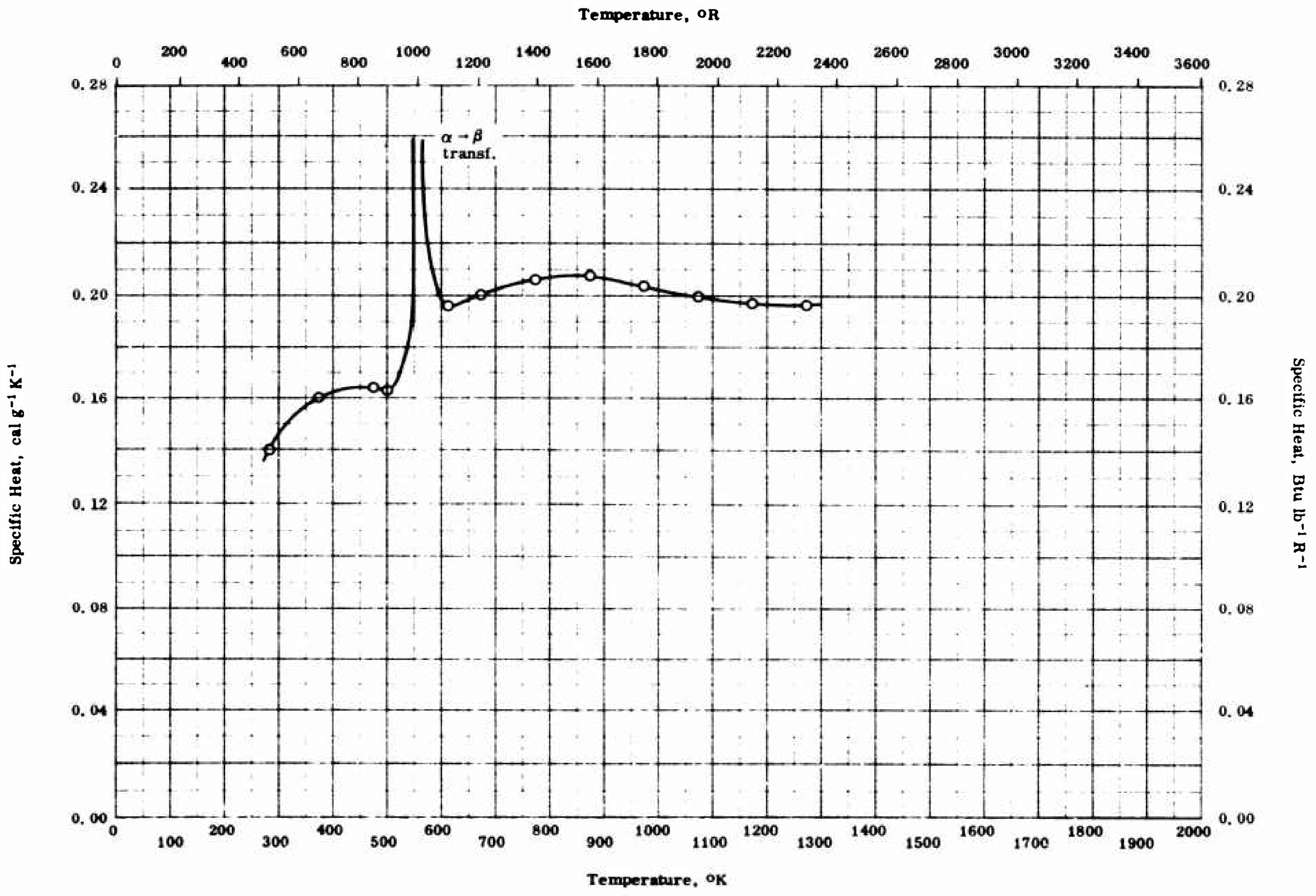


NORMAL SPECTRAL TRANSMITTANCE -- ALUMINUM SILICATE

NORMAL SPECTRAL TRANSMITTANCE -- ALUMINUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range μ	Rept. Error%	Sample Specifications	Remarks
○	64-12	298	1-8	±5	Mullite; McDanel;3 $Al_2O_3 \cdot 2 SiO_2$.	0.005 in. thickness.
△	64-12	298	1-8	±5	Same as above.	0.01 in. thickness.

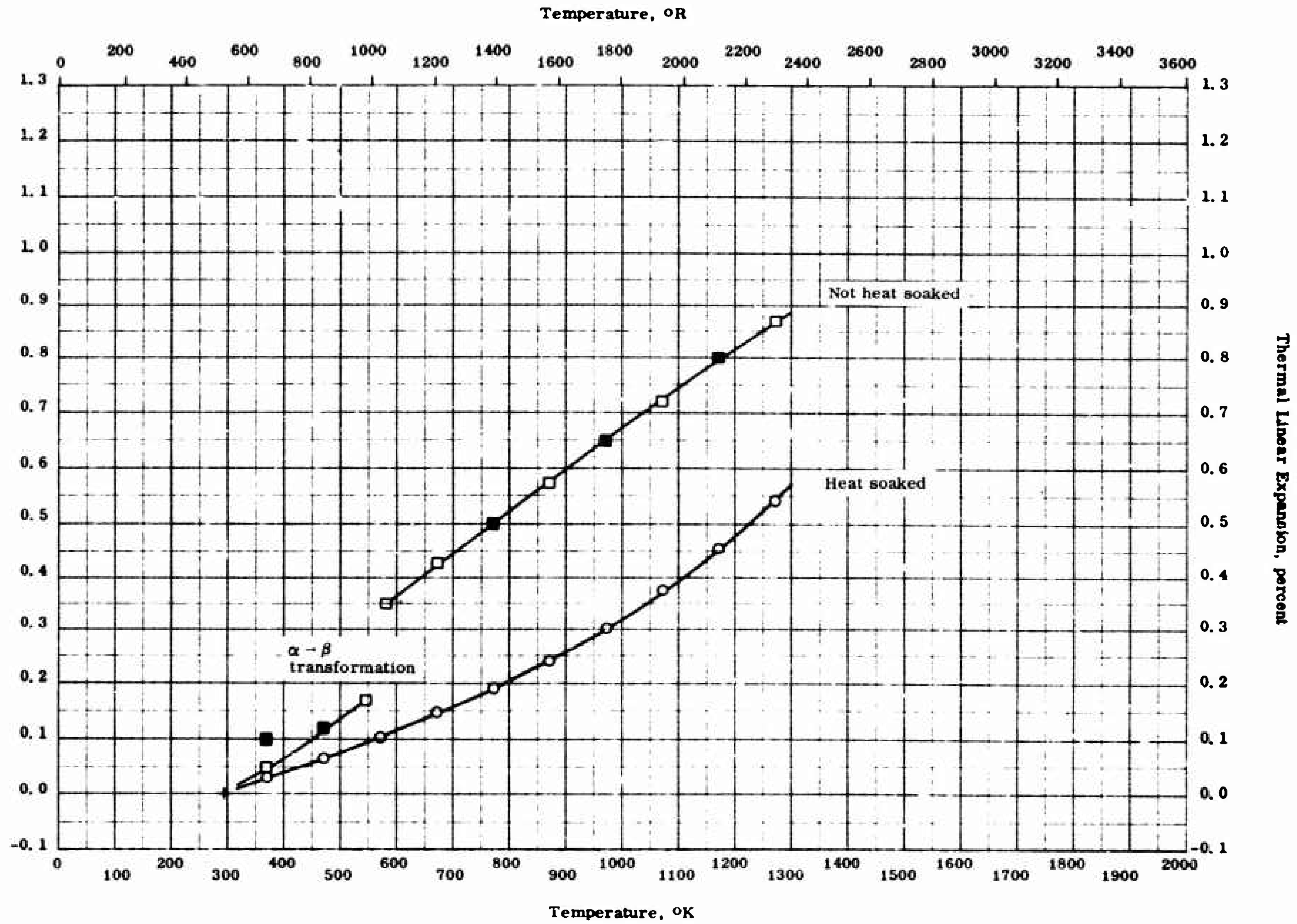


SPECIFIC HEAT -- BARIUM ALUMINUM SILICATE

SPECIFIC HEAT -- BARIUM ALUMINUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	51-20	283-1273		Barium Feldspar, $BaAl_2Si_2O_8$ ($BaO \cdot Al_2O_3 \cdot 2\,SiO_2$); 41.96 BaO, 29.86 SiO_2, 25.67 Al_2O_3, 1.53 CaO, and 0.94 Fe_2O_3; density 206 lb ft^{-3}.	Mixed, kneaded, dried, precalcined at 806 C, electric arc melted and furnace cooled.

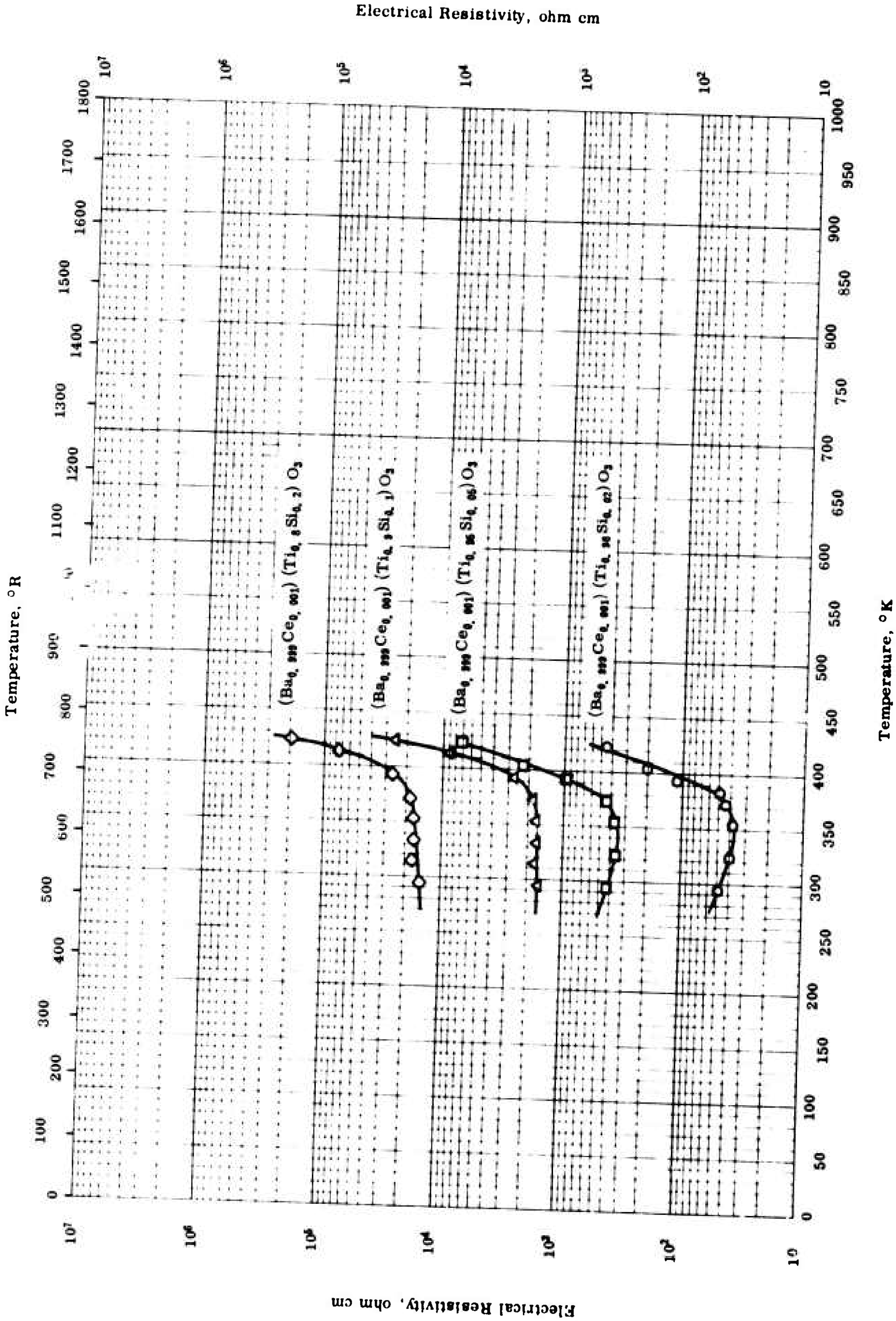


THERMAL LINEAR EXPANSION -- BARIUM ALUMINUM SILICATE
(Barium feldspar)

THERMAL LINEAR EXPANSION -- BARIUM ALUMINUM SILICATE
(Barium feldspar)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error σ	Sample Specifications	Remarks
○	64-17	298-1273		Barium feldspar, $BaO \cdot Al_2O_3 \cdot 2SiO_2$; dimensions 1/4 in. diameter by 4 in. long.	Prepared from calcined alumina, $BaCO_3$, and -325 mesh SiO_2 wet milled in 3000 g batches for 24 hrs with 4500 g of 1 in. diameter alumina balls in 5-1/2 qt. alumina mills, dried to 200 C, formed into pressing granules using organic binder, dry pressed, fired to 1650 C at average heating rate of 100 C hr^{-1}, soaked for 3 hrs, and cooled at average rate of about 100 C hr^{-1}.
□	51-20	293-1273		Barium feldspar; 41.96 BaO, 29.86 SiO_2, 25.67 Al_2O_3, 1.53 CaO, 0.94 Fe_2O_3, and trace of MgO; density 206.2 lb ft^{-3}.	Synthesized from pure barium carbonate and Kaolin, mixed, kneaded, dried, precalcined at 800 C, melted in electric arc furnace, and furnace cooled.
■	51-20	373-1173		Same as above.	Cooling cycle for above sample.

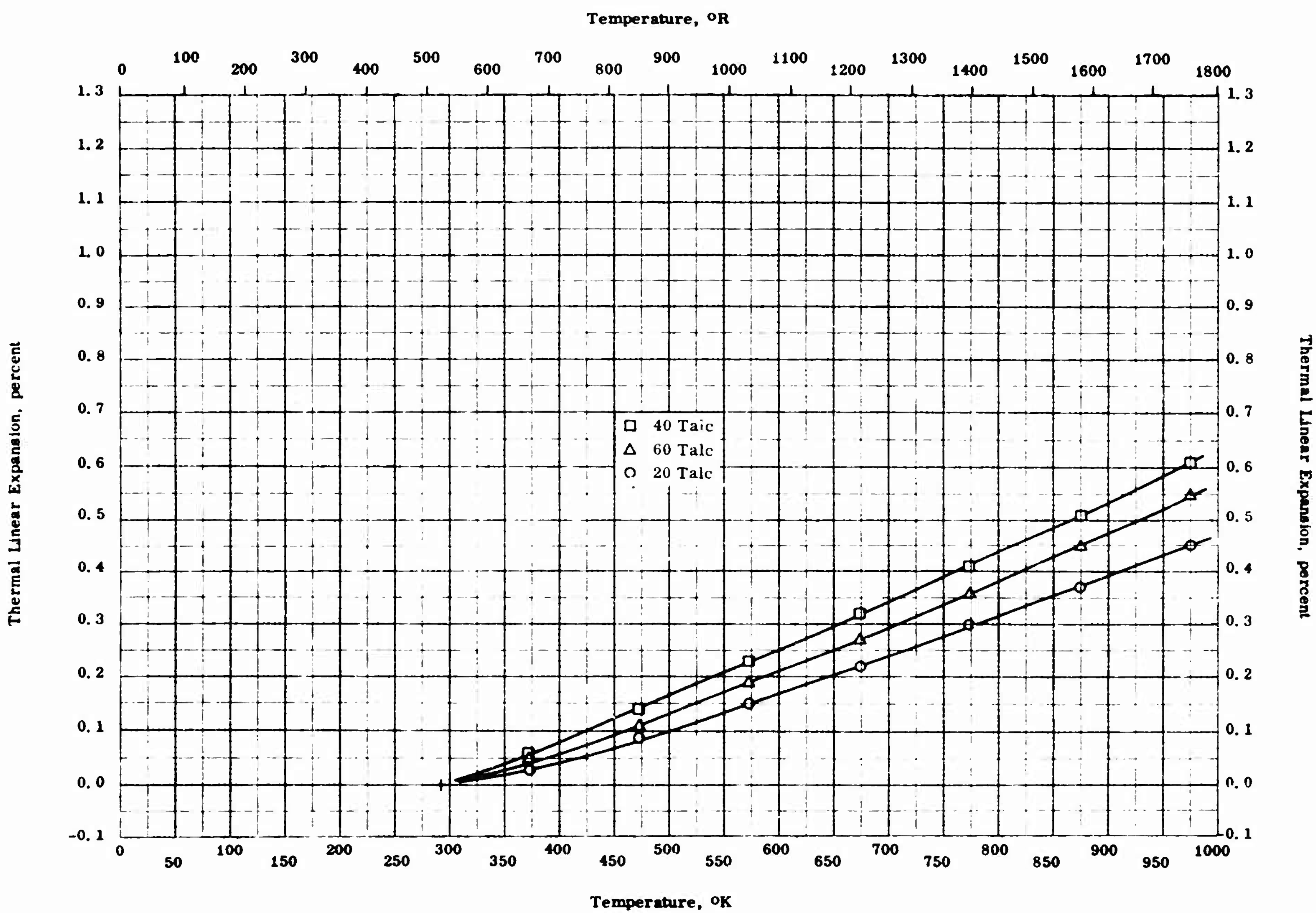


ELECTRICAL RESISTIVITY -- BARIUM CERIUM TITANATE SILICATE

ELECTRICAL RESISTIVITY -- BARIUM CERIUM TITANATE SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-23	293-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.98}Si_{0.02})O_3$; prepared from 99.99 pure barium titanyl oxalate, 99.99 cerium oxalate, 99.99 titanium dioxide, and 99 pure silicon dioxide; grayish blue color.	Calcined stoichiometric amount of raw materials at 1000 C for 1 hr, crushed to 80 mesh, moistened and pressed with 600 $Kg\text{-}cm^{-2}$ to disks of 2 mm thick and 20 mm dia., fired at 1350-1400 C for 1-2 hrs; equivalent water absorption 2.26%.
□	61-23	293-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.95}Si_{0.05})O_3$; same as above.	Same as above; equivalent water absorption 0.40%.
△	61-23	293-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.90}Si_{0.10})O_3$; same as above.	Same as above; equivalent water absorption 0.55%.
◇	61-23	293-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.80}Si_{0.20})O_3$; same as above.	Same as above; equivalent water absorption 0.70%.

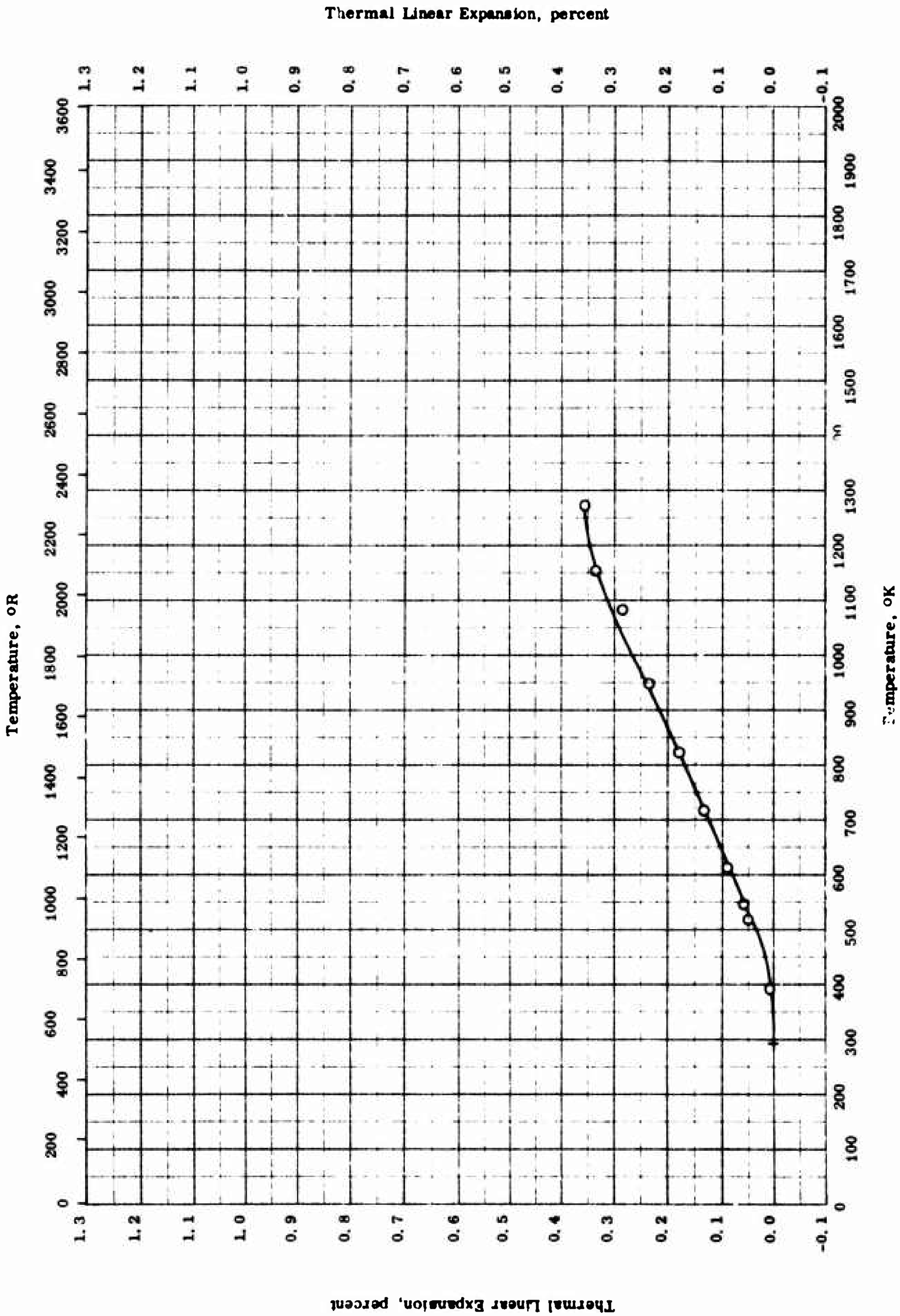


THERMAL LINEAR EXPANSION -- BARIUM CALCIUM SILICATE

THERMAL LINEAR EXPANSION -- BARIUM CALCIUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-36	293-973		60 Wollastonite, 20 Sierra high grade talc, 10 Ba CO_3, and 10 E. P. K. clay.	Tested at 2 - 3 C min^{-1} rise.
□	55-36	293-973		40 Wollastonite, 40 Sierra high grade talc, 10 $BaCO_3$, and 10 E. P. K. clay.	Same as above.
△	55-36	293-973		60 Sierra high grade talc, 20 Wollastonite, 10 Ba CO_3, and 10 E. P. K. clay.	Same as above

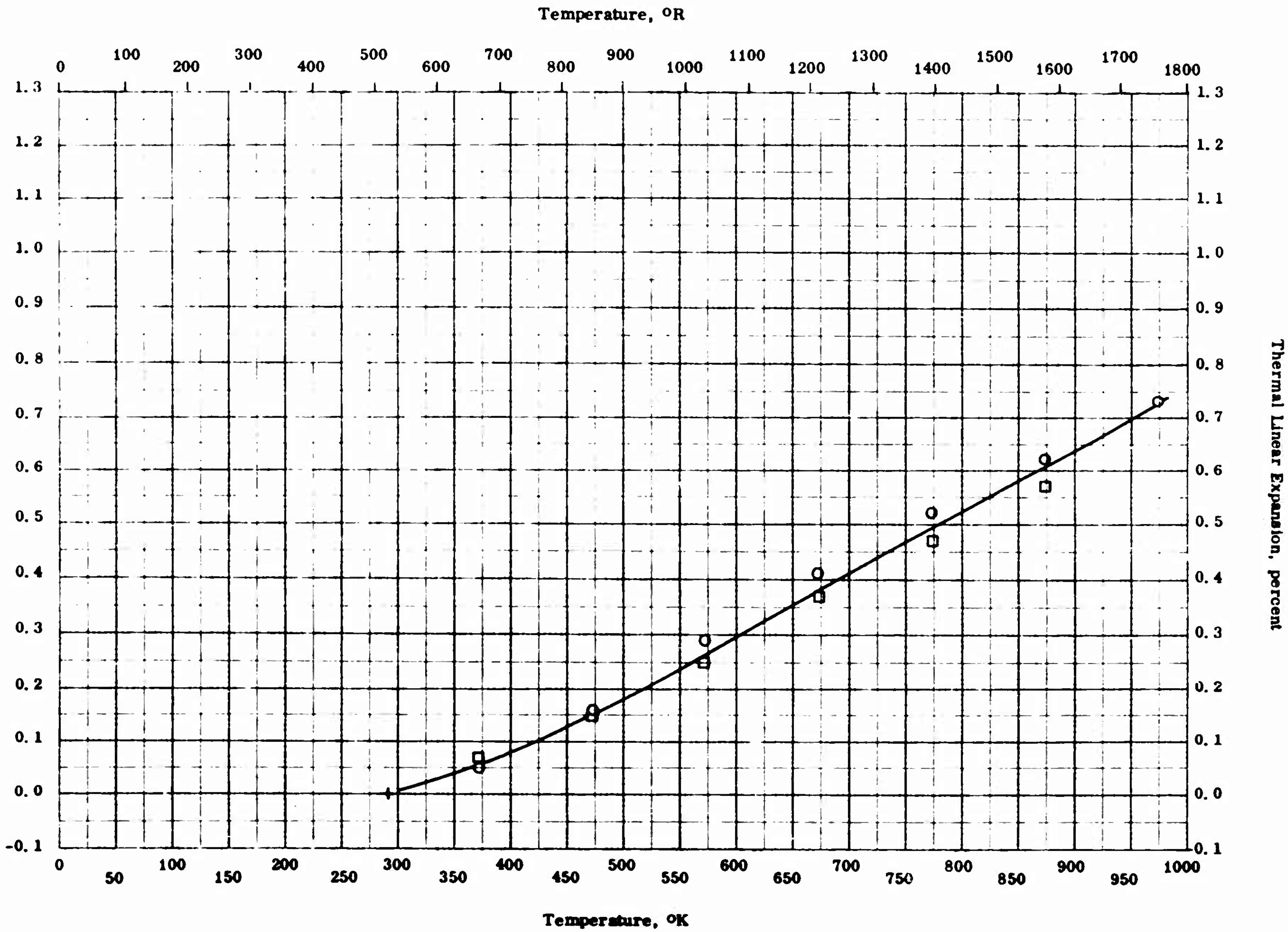


THERMAL LINEAR EXPANSION -- BARIUM COPPER SILICATE

THERMAL LINEAR EXPANSION -- BARIUM COPPER SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-36	301-1273		$BaCuSi_4O_{10}$.	Prepared by mixing barium carbonate with CuO and SiO_2 in 1: 1: 4 mole ratio, fired at 900 C for 4 hrs, reground to pass a 100 mesh screen, mixed with 15% binder (40 g Carbowax 20 M, 20 cc of 2% Methocel solution and 40 cc H_2O), pressed into 4 3/8 in. long by 7/16 in. square bar at 6000 psi. and fired at 1215 C for 4 hrs; measured with heating rate of 3 C min^{-1}.

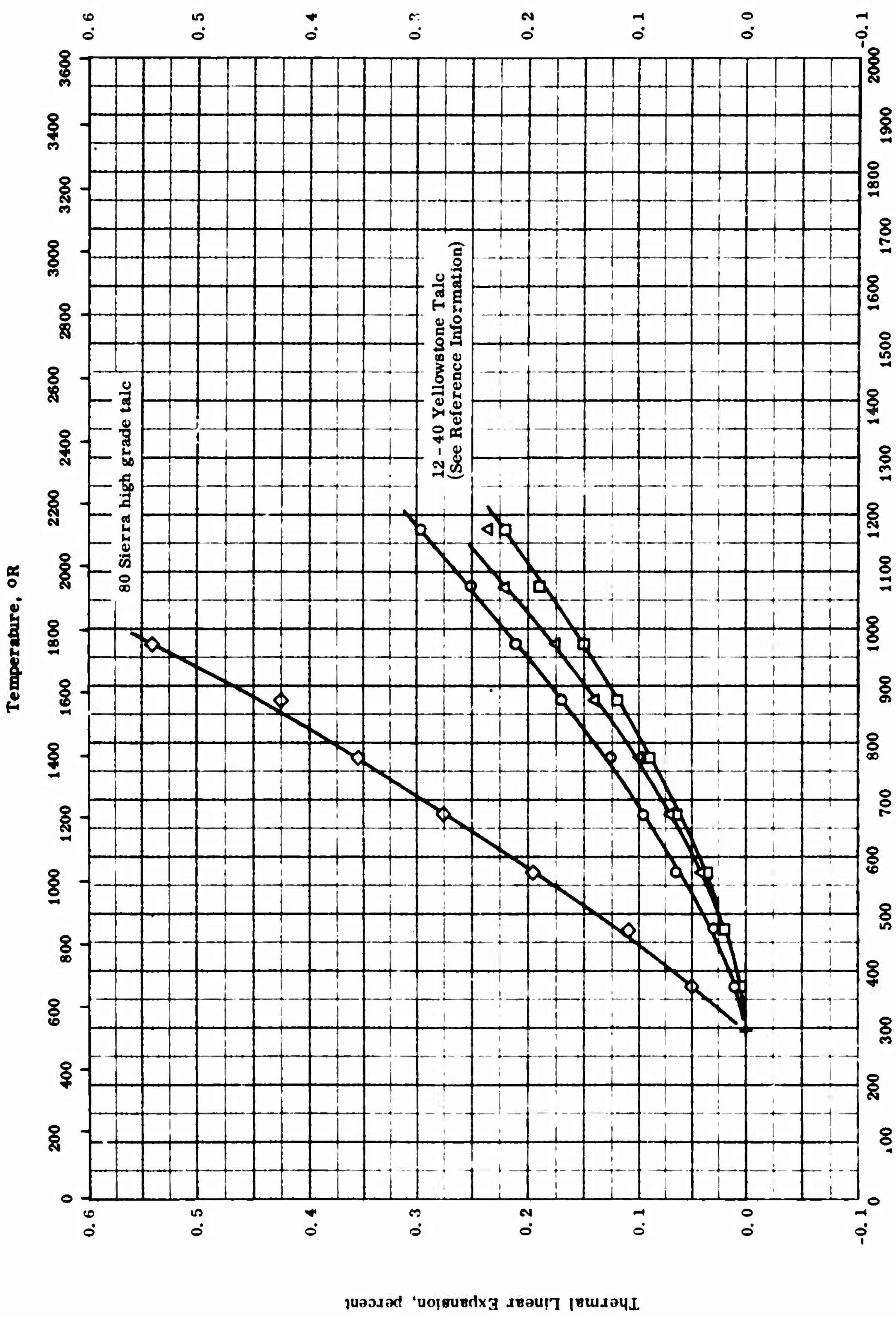


THERMAL LINEAR EXPANSION -- BARIUM MAGNESIUM SILICATE

THERMAL LINEAR EXPANSION -- BARIUM MAGNESIUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-36	373-973		54.6 $BaCO_3$, 31.6 talc, and 13.8 MgO; final product approx. $BaO \cdot 3\,MgO \cdot SiO_2$; density 210 lb ft^{-3}.	Fired at 2660 F; tested at 2 - 3 C min^{-1} rise.
□	55-36	373-973		58 talc, 33.7 $BaCO_3$, and 8.3 MgO; final product approx. $BaO \cdot 4\,MgO \cdot 3.5\,SiO_2$; density 192 lb ft^{-3}.	Fired at 2450 F; tested at 2 - 3 C min^{-1} rise.

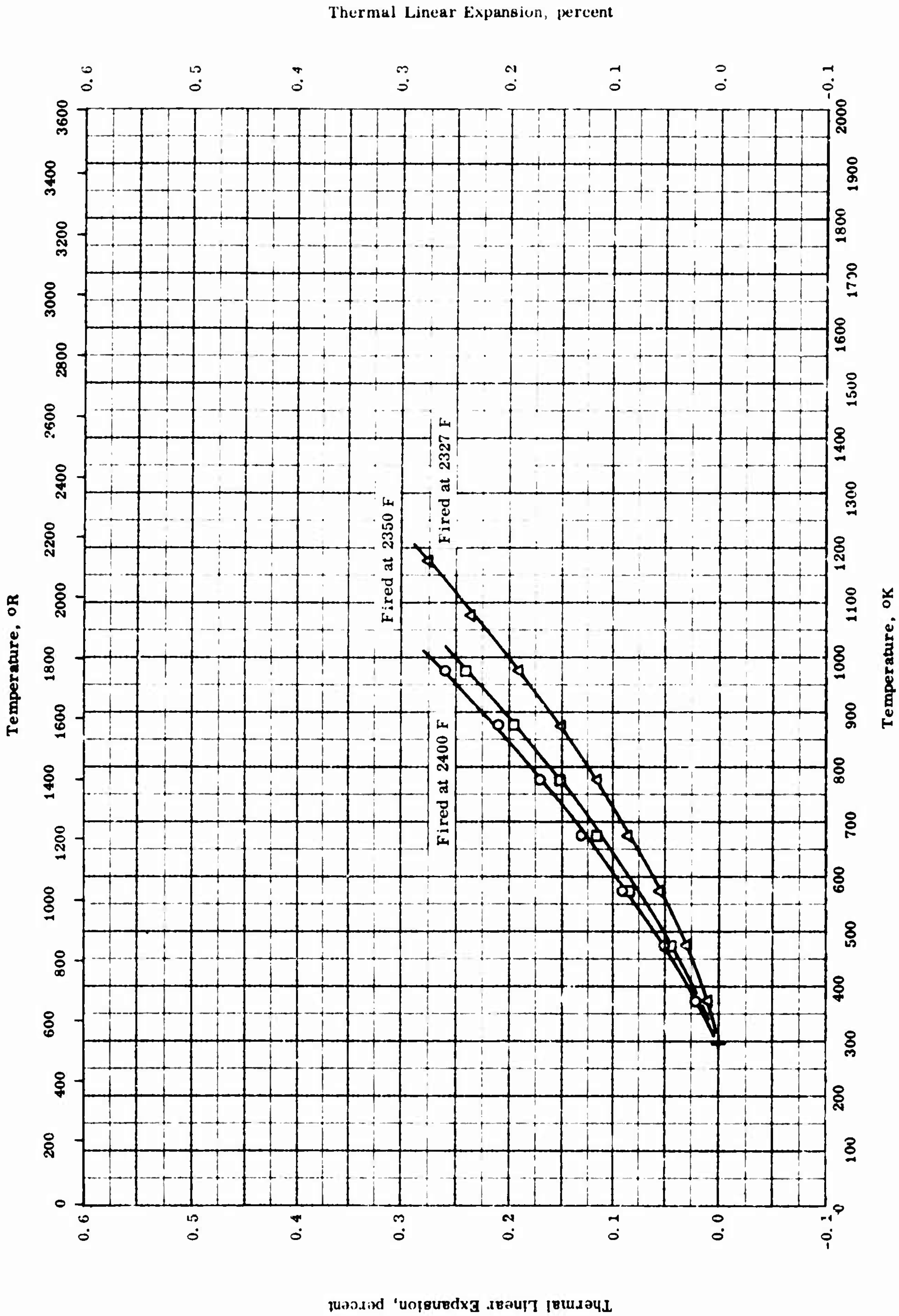


THERMAL LINEAR EXPANSION -- BARIUM MAGNESIUM ALUMINUM SILICATE
(Low density barium cordierite)

THERMAL LINEAR EXPANSION -- BARIUM MAGNESIUM ALUMINUM SILICATE
(Low density barium cordierite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-40	373-1173		40 Yellowstone talc, 37.3 E. P. K., 13.6 Al_2O_3, and 9.1 $BaCO_3$; absorption 5.3%.	Fired at 1275 C.
□	54-40	373-1173		61.7 E. P. K., 15.8 $MgCO_3$, 13.4 Yellowstone talc, and 9.1 $BaCO_3$; absorption 7.8%.	Fired at 1288 C.
△	54-40	373-1173		56.6 E. P. K., 14.5 $MgCO_3$, 12.3 Yellowstone talc, 8.3 each $BaCO_3$, $PbSiO_3$; absorption 15.8%.	Fired at 1260 C.
◇	55-36	373-973		80 Sierra high grade talc, 10 each $BaCO_3$, E. P. K. clay.	Tested at 2 - 3 C min^{-1} rise.

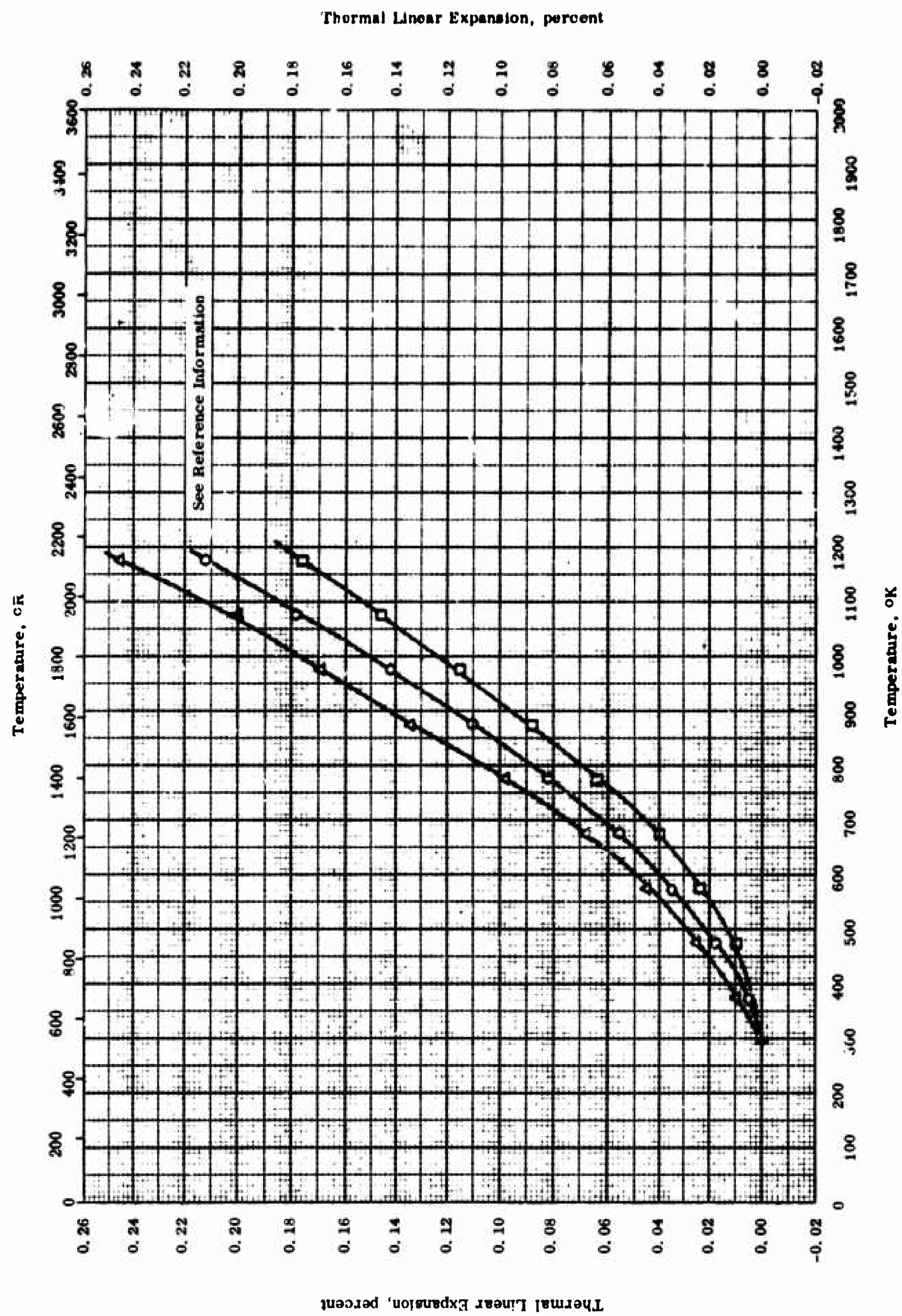


THERMAL LINEAR EXPANSION -- BARIUM MAGNESIUM ALUMINUM SILICATE
(Medium density barium cordierite)

THERMAL LINEAR EXPANSION -- BARIUM MAGNESIUM ALUMINUM SILICATE
(Medium density barium cordierite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-5	293-973		$3BaO \cdot 2MgO \cdot 8Al_2O_3 \cdot 26SiO_2$; 32 E. P. K, 32 Sparks North Carolina kaolin, 17 $BaCO_3$, 11 potter's flint, and 8 Sierra high grade talc.	Fired at 2400 F.
□	53-5	293-973		$3BaO \cdot 2MgO \cdot 8Al_2O_3 \cdot 26SiO_2$; same as above.	Fired at 2350 F.
△	54-40	373-1173		45.4 E. P. K., 45.4 Sierralite, and 9.1 $BaCO_3$; absorption 3.2%.	Fired at 2327 F.

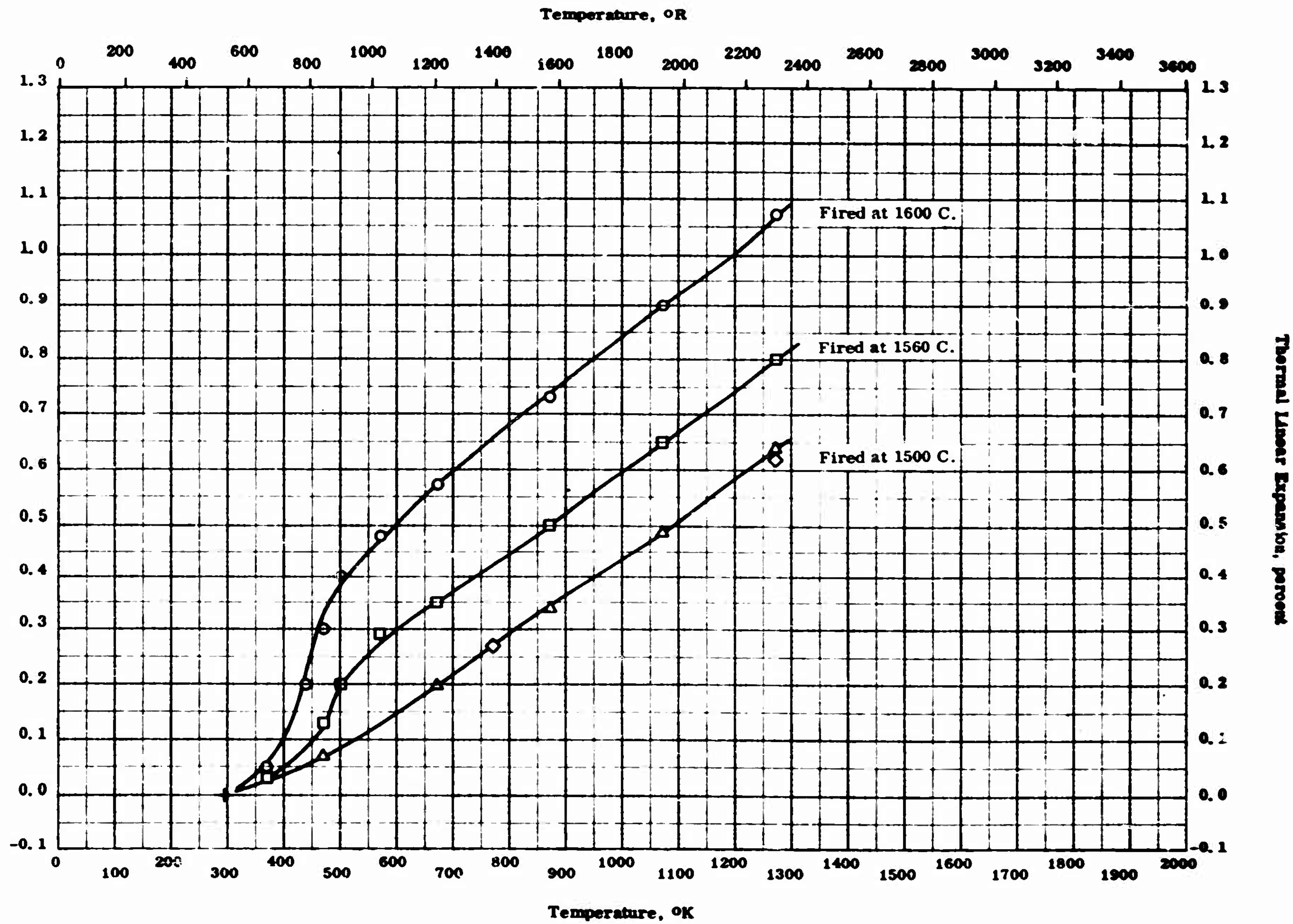


THERMAL LINEAR EXPANSION -- BARIUM MAGNESIUM ALUMINUM SILICATE
(Dense barium cordierite)

THERMAL LINEAR EXPANSION -- BARIUM MAGNESIUM ALUMINUM SILICATE
(Dense barium cordierite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-40	373-1173		68.2 E. P. K., 22.7 Yellowstone talc, and 9.1 $BaCO_3$.	Fired at 1288 C; absorption 0.3%.
□	54-40	373-1173		65.9 E. P. K., 20.0 Yellowstone talc, 9.1 $BaCO_3$, and 5 $MgCO_3$.	Fired at 1300 C; absorption 0.5%.
△	54-40	373-1173		45.4 E. P. K., 37.1 Sierralite, 9.1 $BaCO_3$, and 8.4 Yellowstone talc.	Fired at 1288 C; absorption 0.7%.

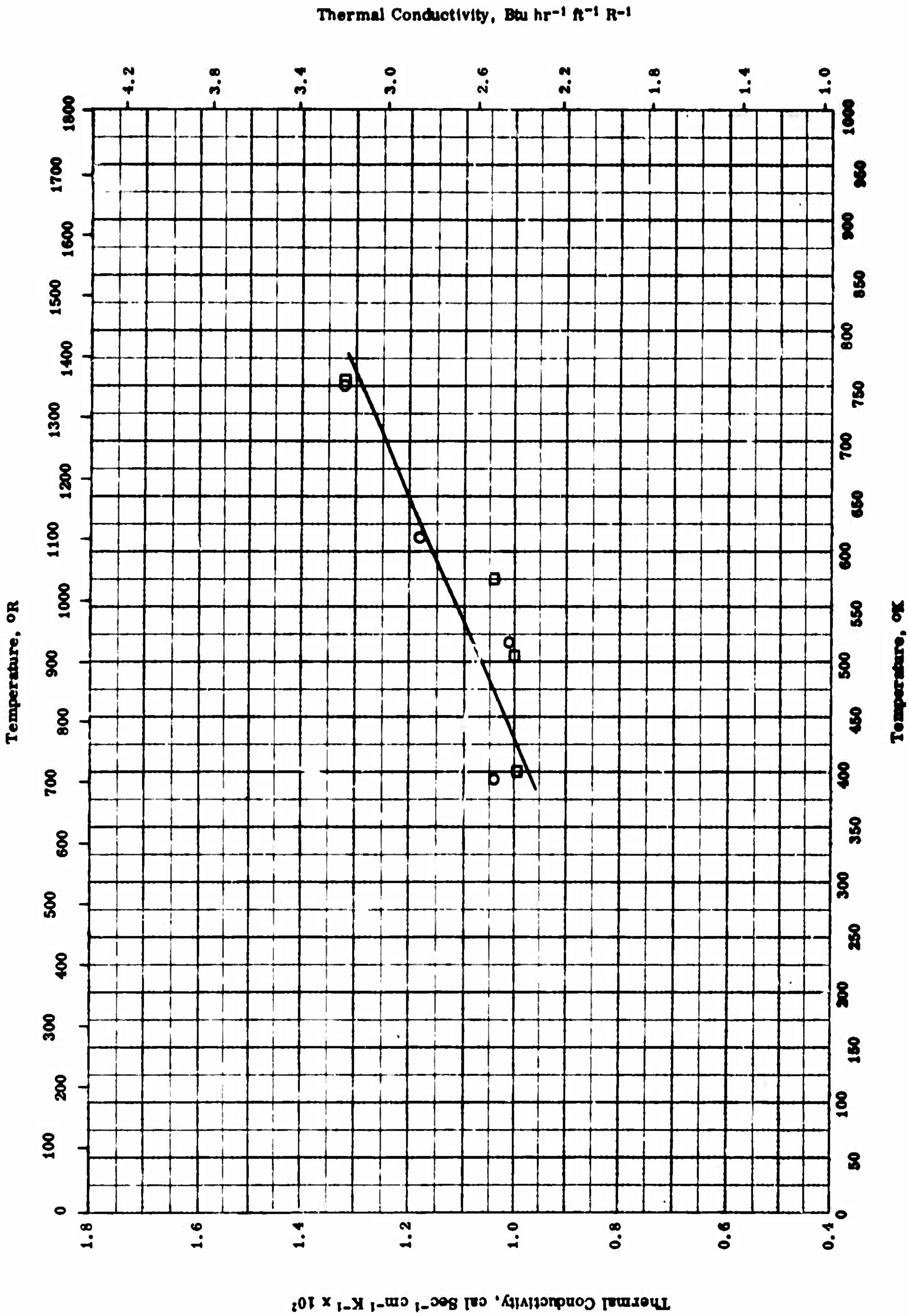


THERMAL LINEAR EXPANSION -- BERYLLIUM SILICATE

THERMAL LINEAR EXPANSION -- BERYLLIUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
◇	60-35	298-1273		2 BeO · SiO_2.	
○	48-8	293-1273		2 BeO · SiO_2, synthetic phenacite.	Decomposes at 1560 C into component oxides; fired at 1600 C.
□	48-8	293-1273		Same as above.	Decomposes at 1560 C into component oxides; fired at 1560 C.
△	48-8	293-1273		Same as above.	Decomposes at 1560 C into component oxides; fired at 1500 C.

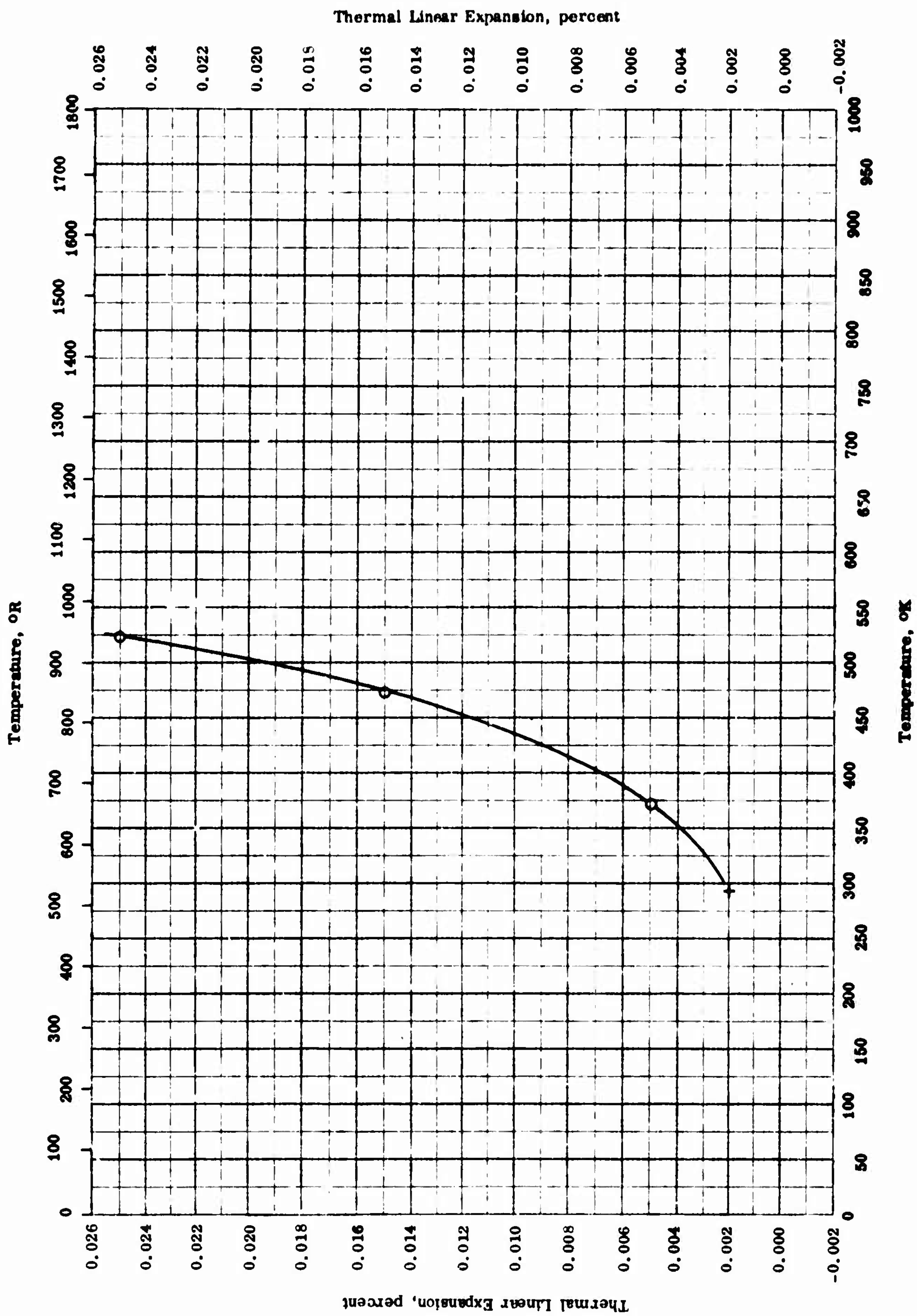


THERMAL CONDUCTIVITY -- BERYLLIUM ALUMINOSILICATE

THERMAL CONDUCTIVITY -- BERYLLIUM ALUMINOSILICATE

REFERENCE INFORMATION

Symbol	Ref	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	43-1	393-755		Beryl (Brazil); $3BeO \cdot Al_2O_3 \cdot 6SiO_2$.	Measured parallel to c-axis.
□	43-1	400-756		Same as above.	Measured normal to c-axis.

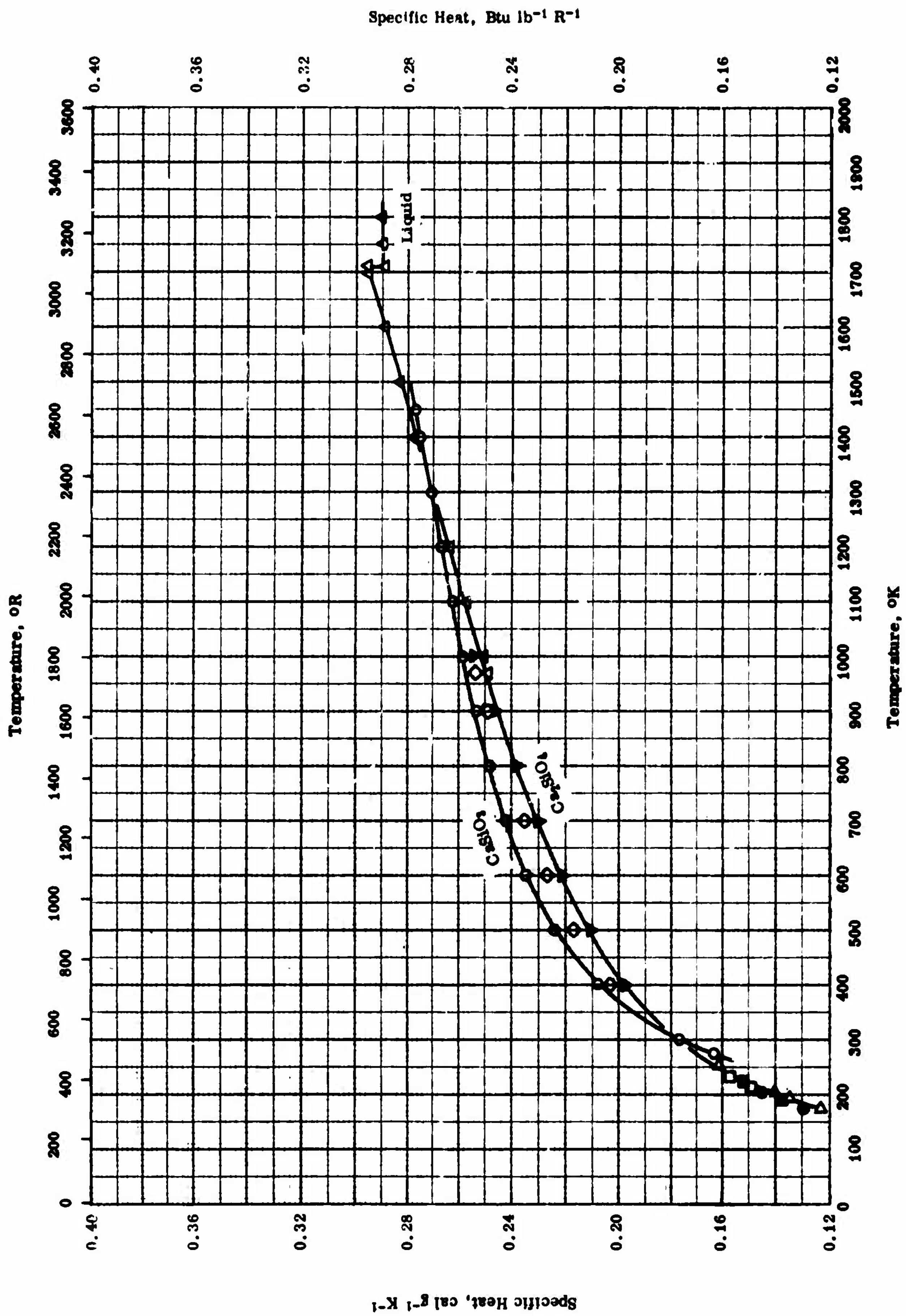


THERMAL LINEAR EXPANSION -- BERYLLIUM ALUMINOSILICATE

THERMAL LINEAR EXPANSION -- BERYLLIUM ALUMINOSILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	52-12	293-523		Beryl.	Measured parallel to c-axis.

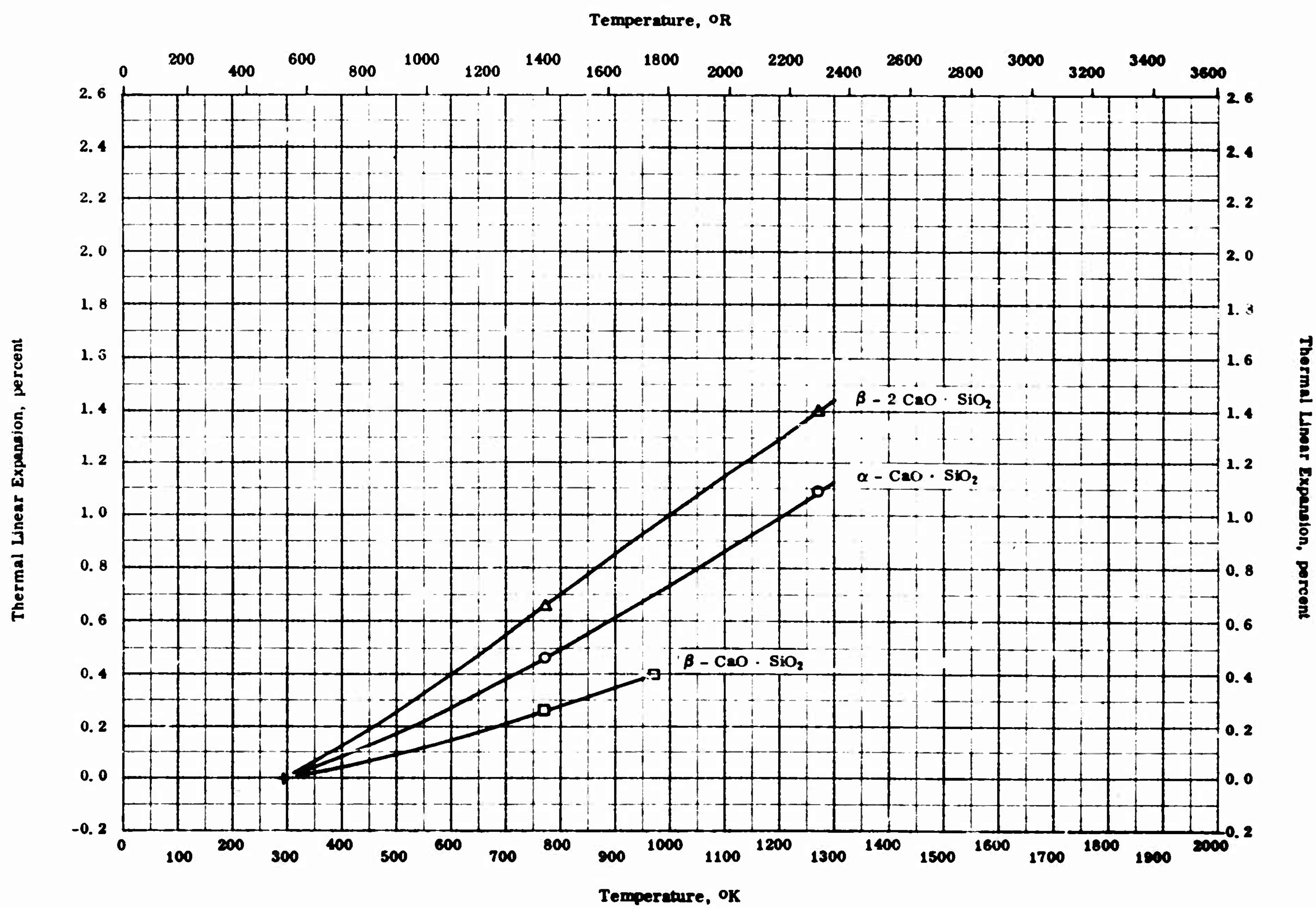


SPECIFIC HEAT -- CALCIUM SILICATE

SPECIFIC HEAT -- CALCIUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▷	57-28	54-298		Calcium orthosilicate, 2 CaO · SiO_2; γ - phase.	
□	51-19	52-298		Calcium orthosilicate, 2 CaO · SiO_2; β - phase; 64.47 CaO.	
△	57-30	970-1800		Calcium orthosilicate; 2 CaO · SiO_2; α' and α phase; 34.68 SiO_2, 0.32 each Al_2O_3, Fe_2O_3, 0.14 MgO and 0.02 ignition loss.	
◇	57-30	298-970		Calcium orthosilicate; 2CaO · SiO_2; β - phase; 64.47 CaO, 34.68 SiO_2, 0.32 Al_2O_3 and Fe_2O_3, 0.14 MgO and 0.02 H_2O.	
▽	57-30	298-1100		Calcium orthosilicate; Ca_2SiO_4 (2CaO · SiO_2), γ-phase; 34.68 SiO_2.	
●	51-19	54-298		Tricalcium silicate, 3CaO · SiO_2; 73.64 CaO, 26.21 SiO_2, 0.13 Al_2O_3, 0.13 Fe_2O_3, 0.11 MgO, and 0.05 ignition loss.	
■	57-28	53-298		Tricalcium disilicate, 3 CaO · $2SiO_2$; 58.37 CaO and 41.62 SiO_2.	
○	41-2	273-1450	0.25	Wollastonite, CaO · SiO_2; 51.52 SiO_2, 47.85 CaO and 0.36 R_2C_3; sample from Riverside County, California.	

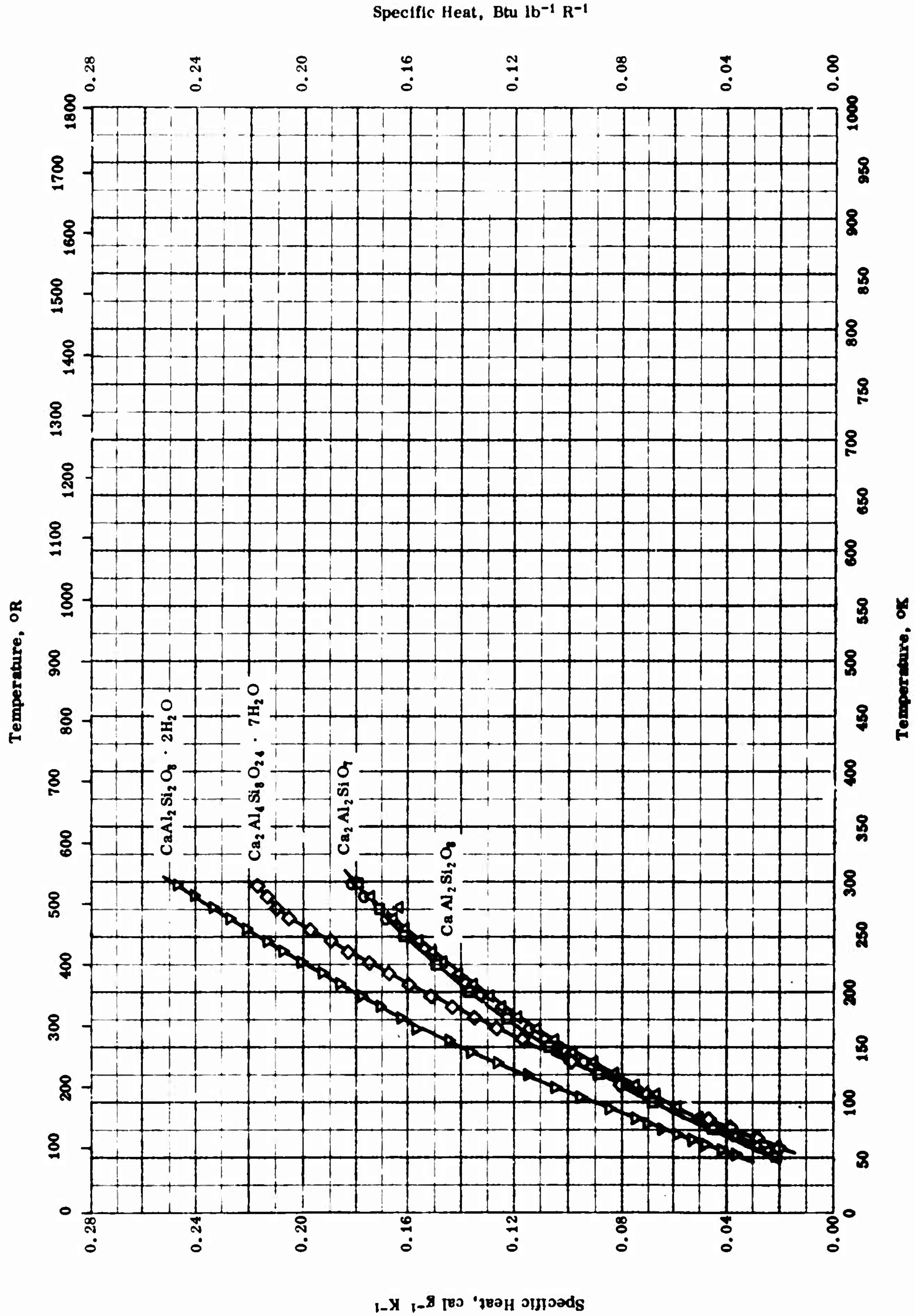


THERMAL LINEAR EXPANSION -- CALCIUM SILICATES

THERMAL LINEAR EXPANSION -- CALCIUM SILICATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-35	298-1273		α - CaO · SiO_2.	
□	60-35	298-973		β - CaO · SiO_2.	
△	60-35	298-1273		β - 2 CaO · SiO_2.	

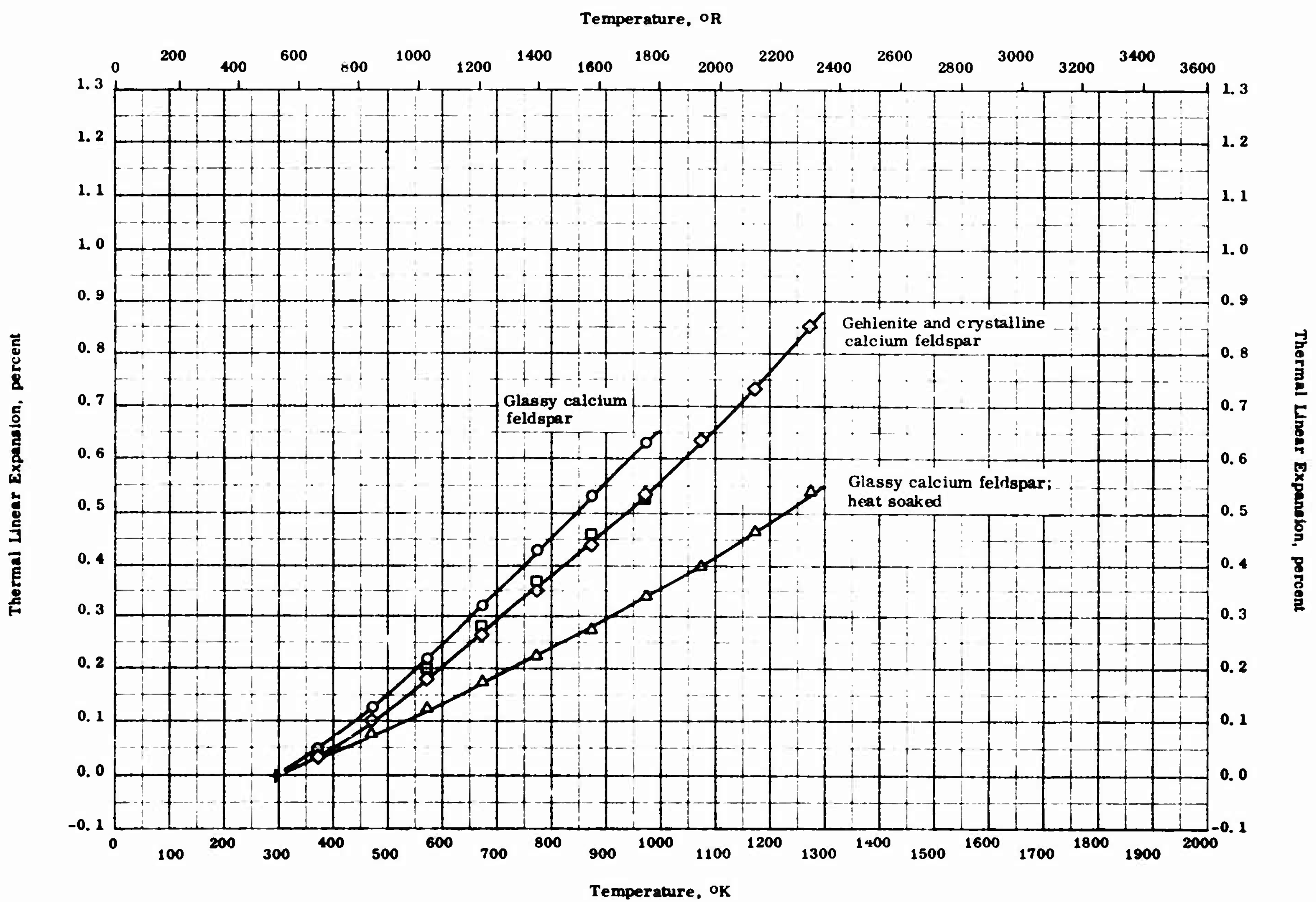


SPECIFIC HEAT -- CALCIUM ALUMINUM SILICATES

SPECIFIC HEAT -- CALCIUM ALUMINUM SILICATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-28	53-298		Anorthite, $CaO \cdot Al_2O_3 \cdot 2SiO_2$; 43.02 SiO_2, 36.64 Al_2O_3, 20.10 CaO, and 0.20 Fe_2O_3.	
□	63-33	50-298	0.3	Gehlenite, $2CaO \cdot Al_2O_3 \cdot SiO_2$; 40.92 CaO, 37.25 Al_2O_3, and 21.86 SiO_2.	Prepared from reagent grade calcium carbonate, alumina, and silica by heating stoichiometric mixtures, 175 hrs at 1050 C, 205 hrs at 1150 C, and 20 hrs at 1300 C.
△	61-33	50-298	0.3	Hexagonal Anorthite, $CaO \cdot Al_2O_3 \cdot 2SiO_2$; 42.99 SiO_2, 34.84 Al_2O_3, 19.77 CaO, 1.76 Fe_2O_3, 0.33 TiO_2, 0.17 H_2O, 0.16 K_2O, 0.15 FeO, 0.07 Na_2O, 0.03 MgO, and 0.01 Mg_2O.	Heated 48 hrs at 600 C, heated 20 min at 830 C.
▽	61-33	50-298		Lawsonite, $CaO \cdot Al_2O_3 \cdot 2SiO_2 \cdot 2H_2O$; 38.14 SiO_2, 30.91 Al_2O_3, 17.54 CaO, 11.49 H_2O, 1.56 Fe_2O_3, 0.29 TiO_2, 0.14 K_2O, 0.13 FeO, 0.06 Na_2O, 0.03 MgO, and 0.01 Mg_2O.	
◇	61-33	50-298		Leonhardite, $2CaO \cdot 2Al_2O_3 \cdot 8SiO_2 \cdot 7H_2O$; 51.30 SiO_2, 22.68 Al_2O_3, 13.67 H_2O, 11.43 CaO, 0.18 FeO, 0.15 K_2O, 0.14 Na_2O, and 0.09 SiO.	Air dried to remove 1 mole loosely bound water.

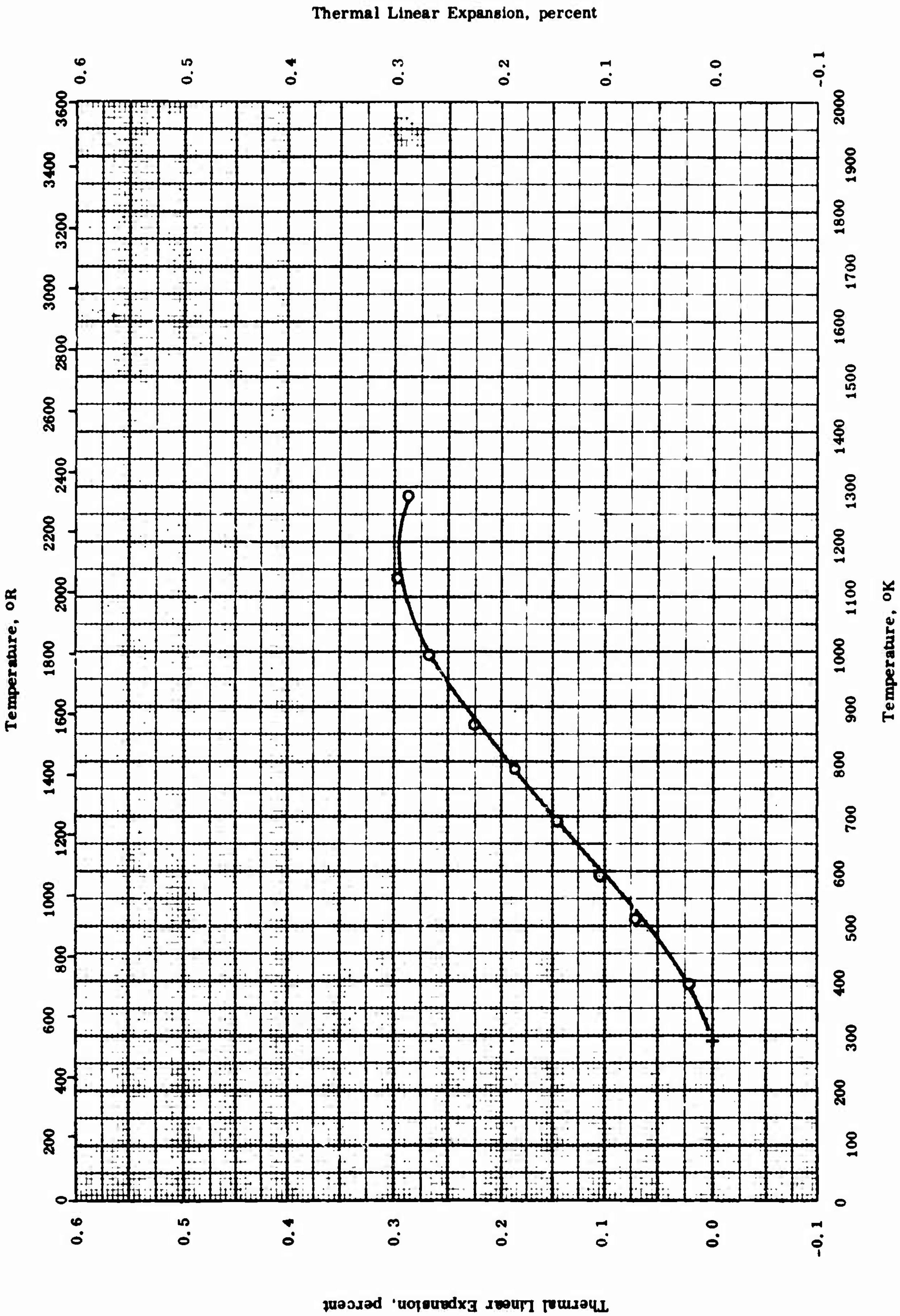


THERMAL LINEAR EXPANSION -- CALCIUM ALUMINUM SILICATES

THERMAL LINEAR EXPANSION -- CALCIUM ALUMINUM SILICATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
△	64-17	298-1273		Calcium Feldspar, $CaO \cdot Al_2O_3 \cdot 2\ SiO_2$; dimensions 1/4 in. diameter by 4 in. long.	Prepared from calcined alumina, $CaCO_3$, and -325 mesh SiO_2 wet milled in 3000 g batches for 24 hrs with 4500 g of 1 in. diameter alumina balls in 5 1/2 qt. alumina mills, dried to 200 C, formed into pressing granules using organic binder, dry pressed, fired to 1650 C at average heating rate of 100 C hr^{-1}, soaked 3 hrs, and cooled at average rage of about 100 C hr^{-1}.
◇	64-17	298-1273		Gehlenite, $2\ CaO \cdot Al_2O_3 \cdot SiO_2$; dimensions 1/4 in. diameter by 4 in. long.	Same as above.
○	41-8	293-973		Calcium feldspar; 50.68 SiO_2, 30.67 Al_2O_3, 13.79 CaO, 3.4 Na_2O, 0.50 Fe_2O_3, 0.42 MgO, 0.09 K_2O, and 0.07 TiO_2; glassy state.	Annealed 1 hr at 10 C below softening point and cooled in 15 hrs.
□	41-8	293-973		Same as above; crystalline state.	Extruded rod plasticized with small amount of gum, air dried, oven dried at 230 F, and fired to cone 06.

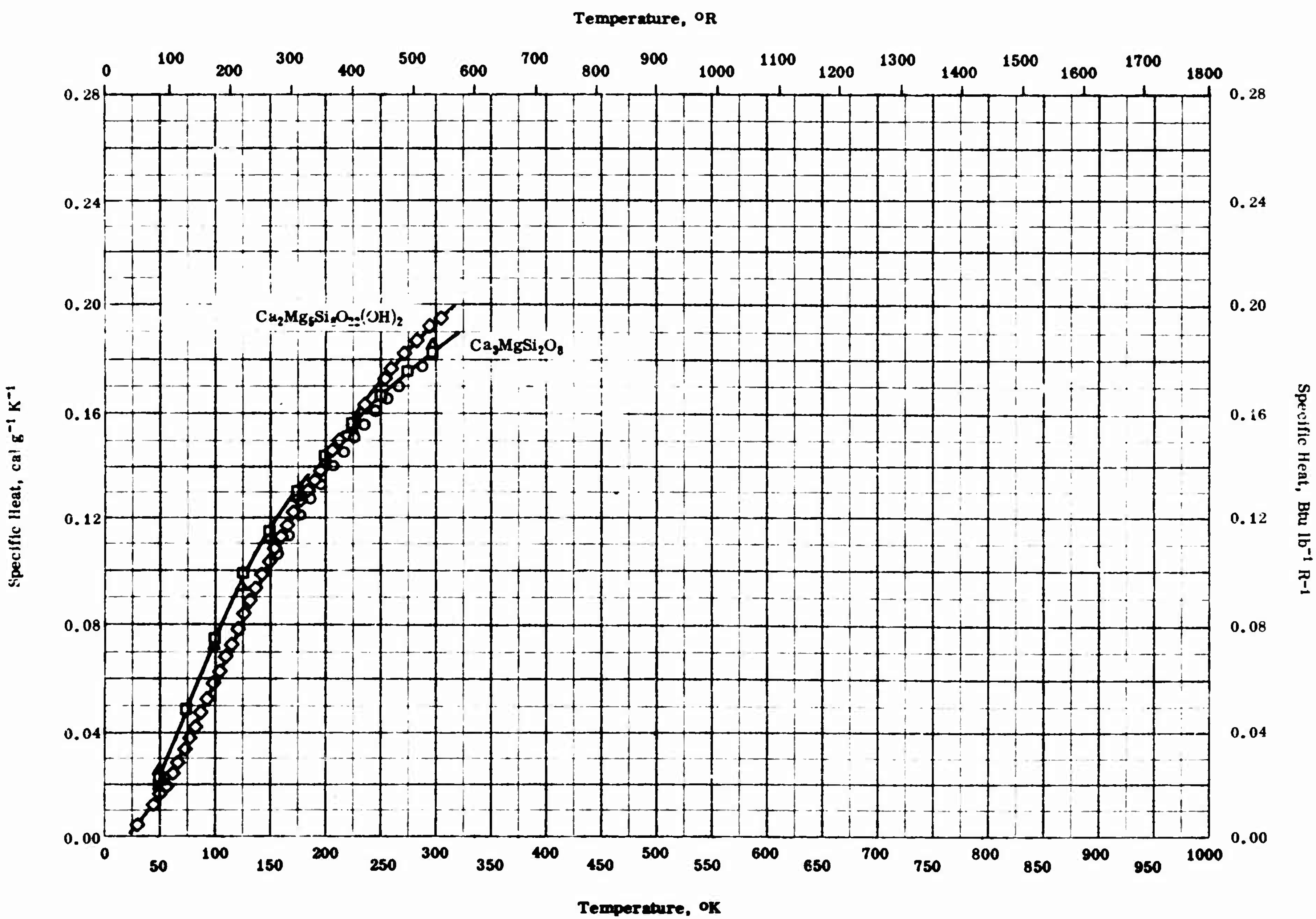


THERMAL LINEAR EXPANSION -- CALCIUM COPPER SILICATE

THERMAL LINEAR EXPANSION -- CALCIUM COPPER SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-36	301-1283	2	$CaCuSi_4O_{10}$.	Prepared by mixing calcium carbonate with CuO and SiO_2 in 1: 1: 4 mole ratio, fired at 900 C for 4 hrs, reground to pass a 100 mesh screen, mixed with 15% binder (40 g Carbowax 20 M, 20 cc of 2 Methocel solution and 40 cc H_2O), pressed in 4 3/8 in. long by 7/16 in. square bar at 6000 psi, and fired at 1215 C for 4 hrs; measured with heating rate of 3 C min^{-1}.

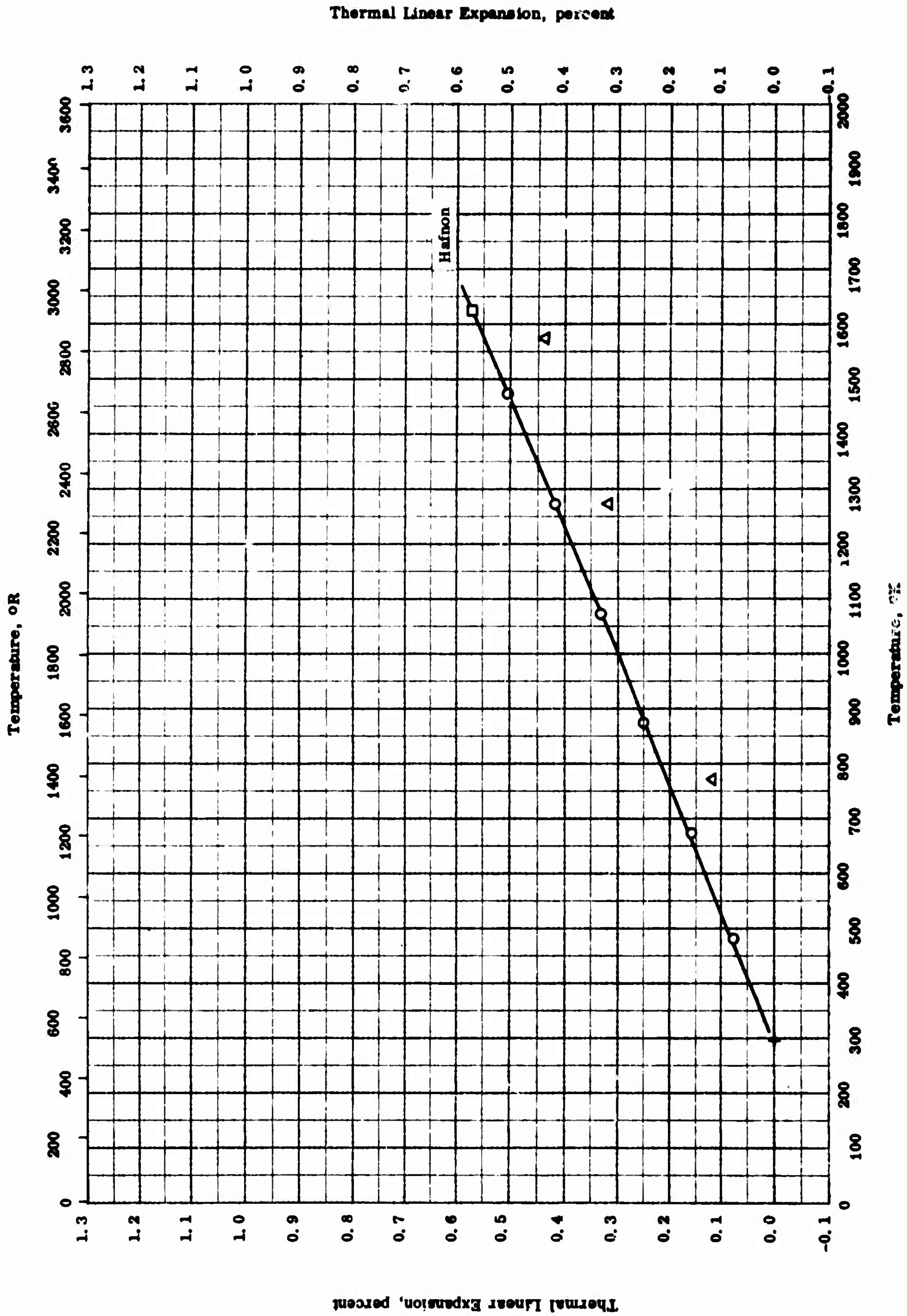


SPECIFIC HEAT -- CALCIUM MAGNESIUM SILICATES

SPECIFIC HEAT -- CALCIUM MAGNESIUM SILICATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-28	53-298		$(CaO \cdot MgO \cdot 2SiO_2)$; 54.78 SiO_2, 25.91 CaO, 18.82 MgO, 0.68 Fe_2O_3, and 0.07 FeO.	
□	63-33	50-298	0.3	Merwinite, $3CaO \cdot MgO \cdot 2SiO_2$; 71.14 CaO, 36.57 SiO_2 and 12.23 MgO.	Prepared by heating reagent grade calcium carbonate, magnesium oxide and silica in stoichrometric mixture 175 hrs at 1100 C, 55 hrs at 1200 C, 50 hrs at 1300 C, and 25 hrs at 1150 C.
△	63-33	50-298	0.3	Akermanite, $2CaO \cdot MgO \cdot 2SiO_2$; 44.14 SiO_2, 41.16 CaO, and 14.82 MgO.	Prepared by heating stoichrometric mixture of reagent grade $CaCO_3$, MgO and SiO_2 45 hrs at 1050 C, 1.5 hrs at 1150 C, and 30 hrs at 1250 C.
◇	63-28	12-305	0.3	Tremolite, $2CaO \cdot 5MgO \cdot 8SiO_2 \cdot H_2O$; 57.76 SiO_2, 25.21 MgO, 12.96 CaO, 2.13 H_2O, 0.51 Al_2O_3, 0.43 Na_2O, 0.31 CO_2, 0.12 K_2O, 0.11 FeO, 0.01 MgO, and 0.01 P_2O_5; single crystals.	Dried 2 hrs at 110 C.

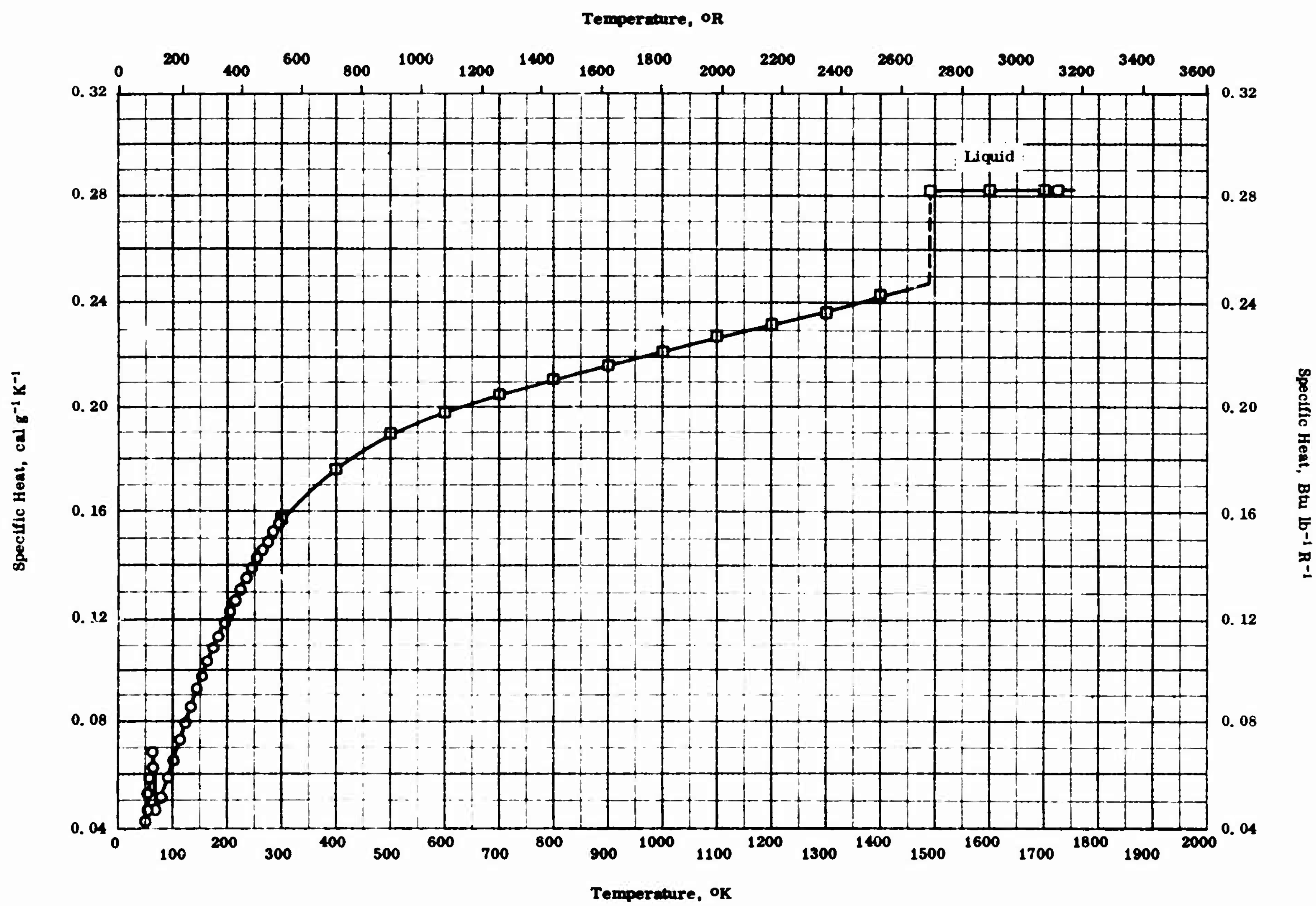


THERMAL LINEAR EXPANSION -- HAFNIUM SILICATE

THERMAL LINEAR EXPANSION -- HAFNIUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
△	60-35	298-1573		$HfO_2 \cdot SiO_2$.	
○	54-18	293-1473		Hafnon; prepared from 99.8* HfO_2 and quartz.	Equimolar 325 mesh powders heated to 1550 C, milled, reheated, pressed at 20,000 psi, and fired 2 hrs at 1550 C.
□	57-35	293-1623		Hafnon; prepared from HfO_2 containing 1 excess Hf, . Zr, 0.5 - 1.0 Fe, Si, 0.1 - 0.5 Mg, 0.05 - 0.10 Ti, Ca, 0.005 - 0.010 Al, and 0.001 - 0.005 Mn, Cu; SiO_2 contained 1 excess Si, 0.01 - 0.05 Al, 0.001 - 0.005 Mg, and 0.0001 - 0.0005 Ca, Cu, and Ti.	

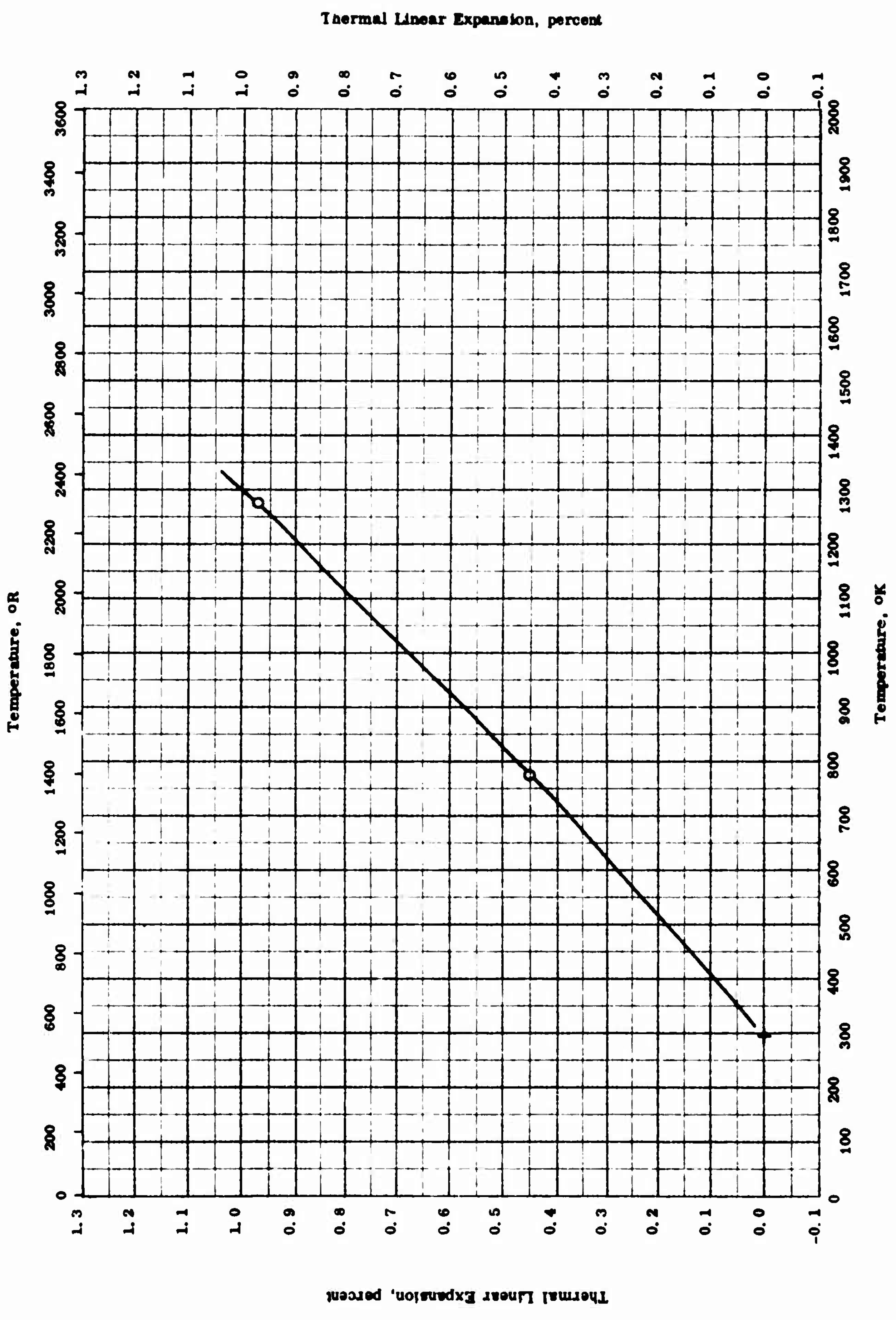


SPECIFIC HEAT -- IRON ORTHOSILICATE

SPECIFIC HEAT -- IRON ORTHOSILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	41-7	52-295		Fe_2SiO_4; 54.5 Fe and 29.5 SiO_2; density 271 lb ft^{-3}.	
□	53-32	298-1724		Fe_2SiO_4; 54.5 Fe and 29.5 SiO_2; density 271 lb ft^{-3}.	



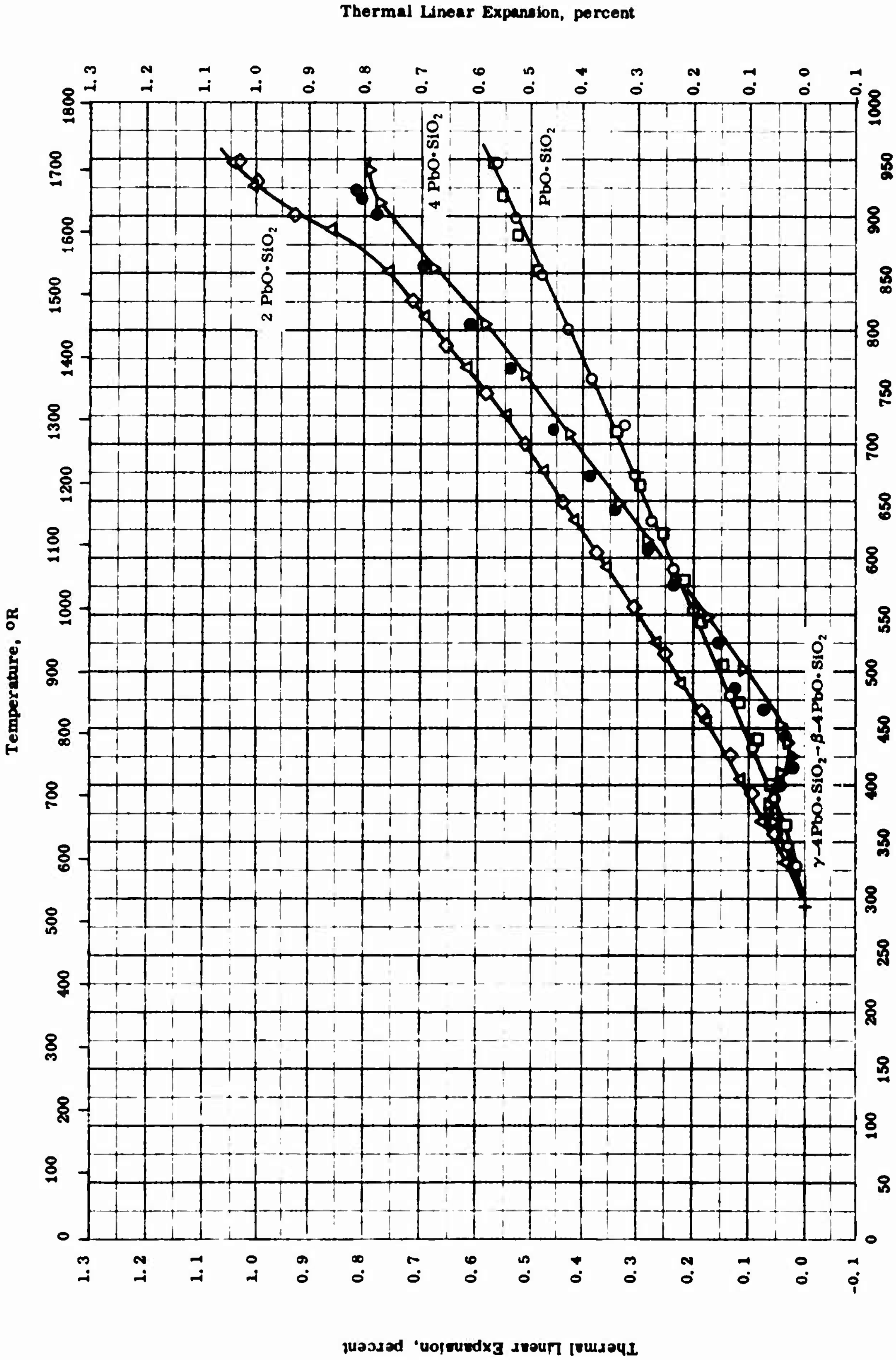
THERMAL LINEAR EXPANSION -- IRON ORTHOSILICATE

THERMAL LINEAR EXPANSION -- IRON ORTHOSILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-35	298-1273		2 $FeO \cdot SiO_2$.	

THERMAL LINEAR EXPANSION -- LEAD SILICATES



THERMAL LINEAR EXPANSION -- LEAD SILICATES

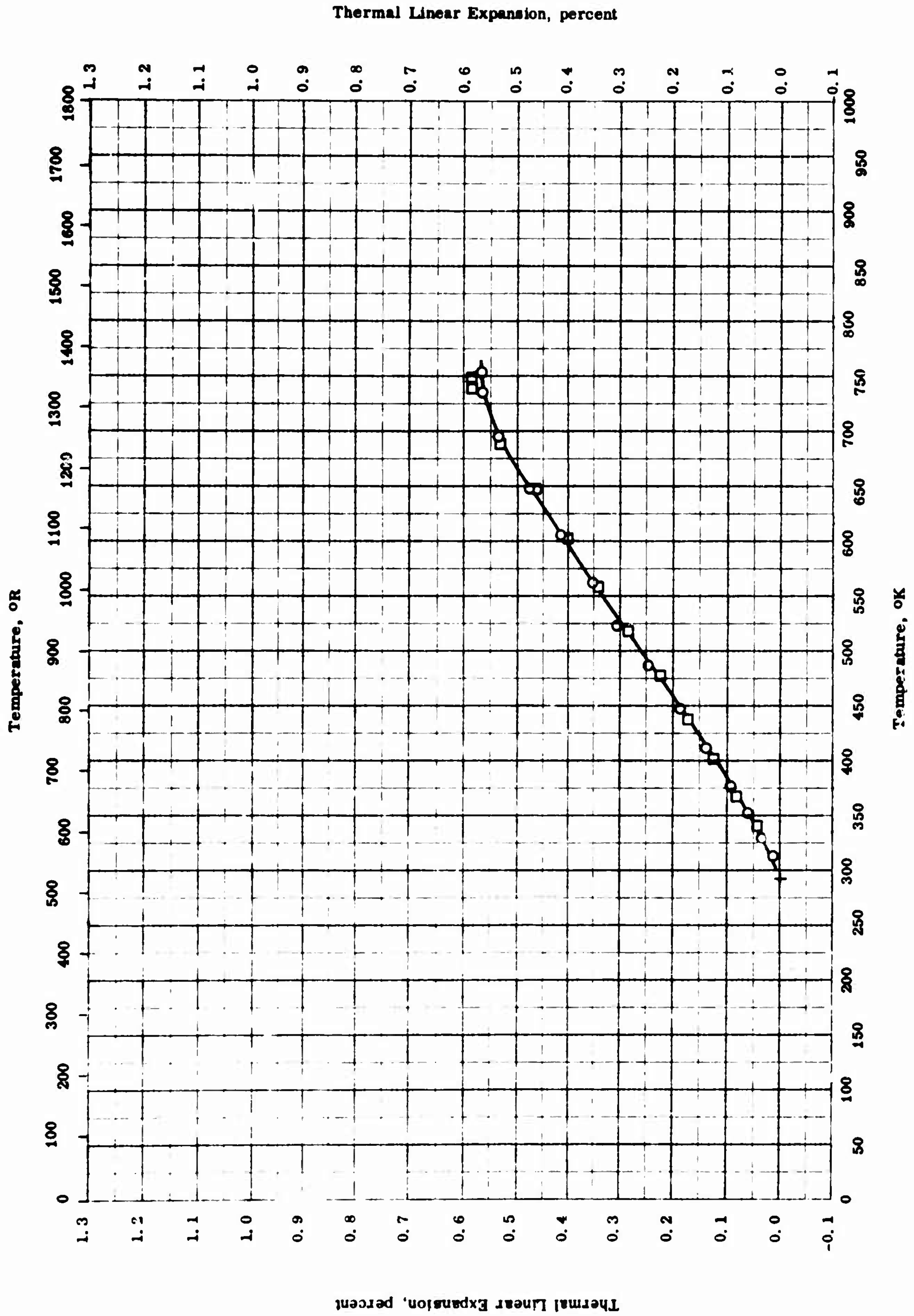
REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-39	298-947		$PbO \cdot SiO_2$; 78.81 PbO and 21.19 SiO_2; prepared from c.p. lead carbonate and silicic acid; original length 109.9 mm.	Hand-mixed with acetone for 15 to 20 min, air dried overnight, calcined at 200 C for 4 hrs, fired to 750 C for 6 hrs, cooled, ground, remixed, fired at 750 C for 24 hrs, ground, mixed with Carbowax solution, forced through 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and sintered to a relatively dense condition; measured with heating rate of 120 C hr^{-1}.
□	60-39	298-949		Same as above.	Second run for above sample.
△	60-39	298-947		$2\,PbO \cdot SiO_2$; 88.14 PbO and 11.86 SiO_2; prepared from c.p. lead carbonate and silicic acid; original length 106.5 mm.	Hand-mixed in acetone for 15 to 20 min, air dried overnight, calcined at 200 C for 4 hrs, fired to 725 C for 6 hrs, cooled, ground, remixed, fired at 725 C for 24 hrs, ground, mixed with Carbowax solution, forced through 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and sintered to a relatively dense condition; measured with heating rate of 120 C hr^{-1}.
◇	60-39	298-949		Same as above.	Second run for above sample.
				(Continued onto next page)	

THERMAL LINEAR EXPANSION -- LEAD SILICATES (Continued)

REFERENCE INFORMATION

Sym bol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▽	60-39	298-941		$4\,PbO \cdot SiO_2$; 93.71 PbO and 6.29 SiO_2; prepared from c. p. lead carbonate and silicic acid; original length 101 mm.	Hand-mixed with acetone for 15 to 20 min, air dried overnight, calcined at 200 C for 4 hrs, fired to 700 C for 6 hrs, cooled, ground, remixed, fired at 700 C for 36 hrs, ground, mixed with Carbowax solution, forced through 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and sintered to a relatively dense condition; measured with heating rate of 120 C hr^{-1}. γ - $4PbO \cdot SiO_2$ → β - $4PbO \cdot SiO_2$ phase transformation in temperature range 110 - 152 C.
●	60-39	298-923		Same as above.	Second run for above sample.

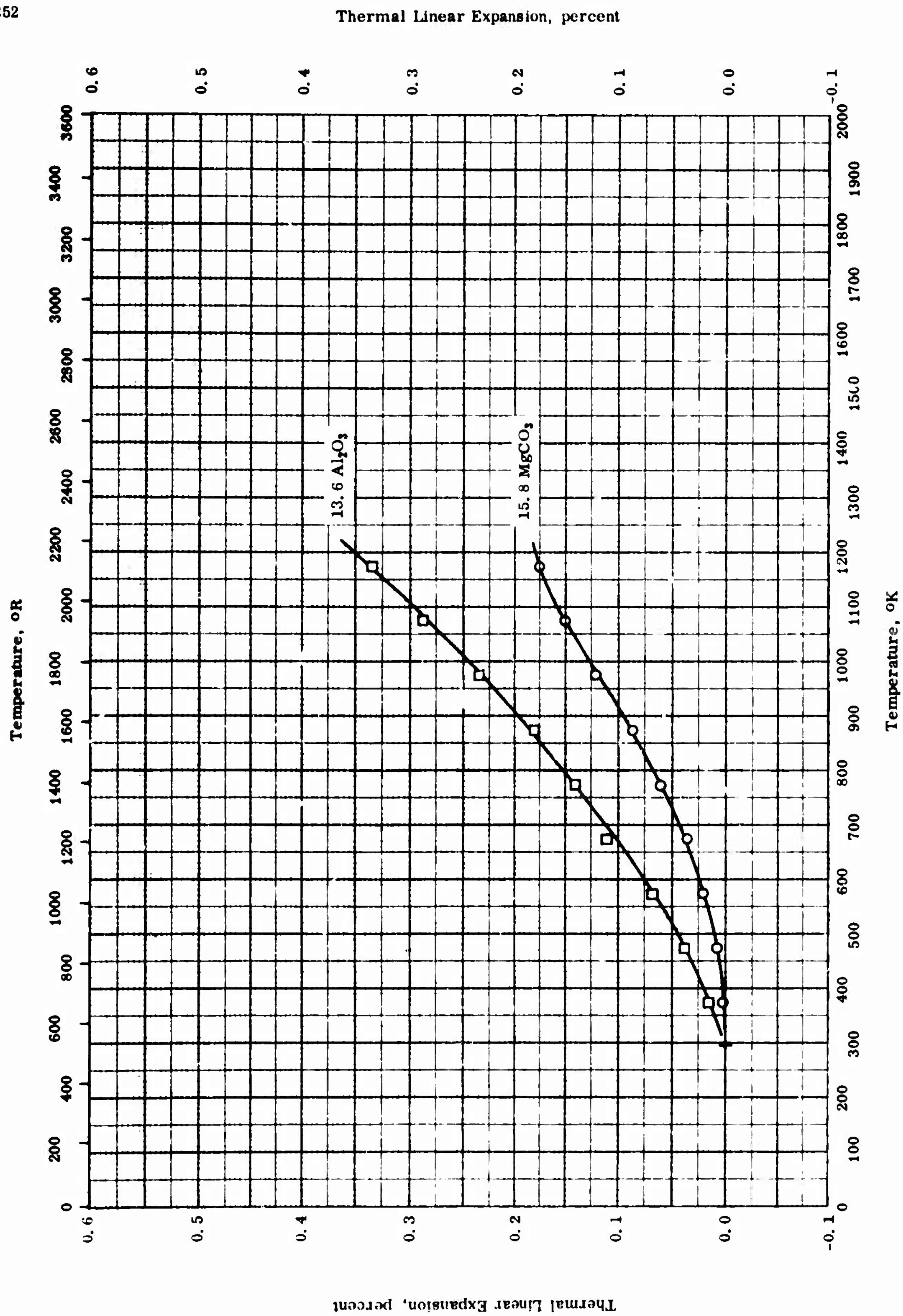


THERMAL LINEAR EXPANSION -- LEAD BORON SILICATE

THERMAL LINEAR EXPANSION -- LEAD BORON SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-39	298-753		5 PbO · B_2O_3 · SiO_2; 89.56 PbO, 5.59 B_2O_3, and 4.85 SiO_2; prepared from c.p. lead carbonate, silicic acid, and boric acid; original length 79.9 mm.	Hand-mixed with acetone for 15 to 20 min , air-dried overnight, calcined at 200 C for 4 hrs, fired to 500 C for 6 hrs, cooled, ground, remixed, fired at 500 C for 24 hrs, ground, mixed with carbowax solution, forced through 20-mesh sieve, pressed into 10 by 1 by 1 cm bars at 1000 psi, and sintered to a relatively dense condition; measured with heating rate of 120 C hr^{-1}.
□	60-39	298-749		Same as above; original length 79.8 mm.	Second run for above sample.

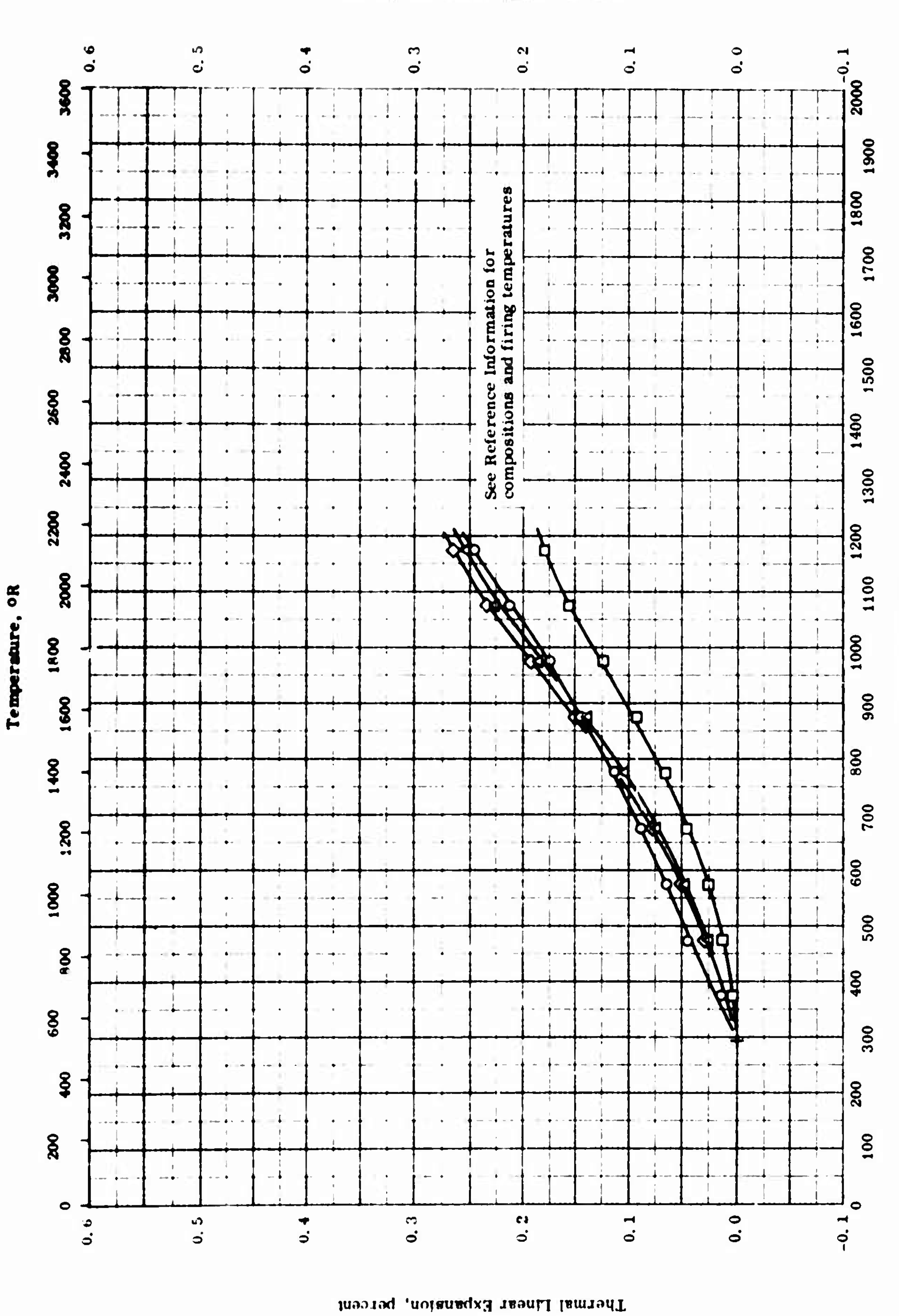


THERMAL LINEAR EXPANSION -- LEAD MAGNESIUM ALUMINUM SILICATE
(Low density lead cordierite)

THERMAL LINEAR EXPANSION -- LEAD MAGNESIUM ALUMINUM SILICATE
(Low density lead cordierite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-40	373-1173		61.7 E. P. K., 15.8 $MgCO_3$, 13.4 Yellowstone talc, and 9.1 $PbSiO_3$; absorption 8.9%.	Fired at 1316 C.
□	54-40	373-1173		40 Yellowstone talc, 37.3 E. P. K., 13.6 Al_2O_3, and 9.1 $PbSiO_3$; absorption 8.6%.	Fired at 1260 C.

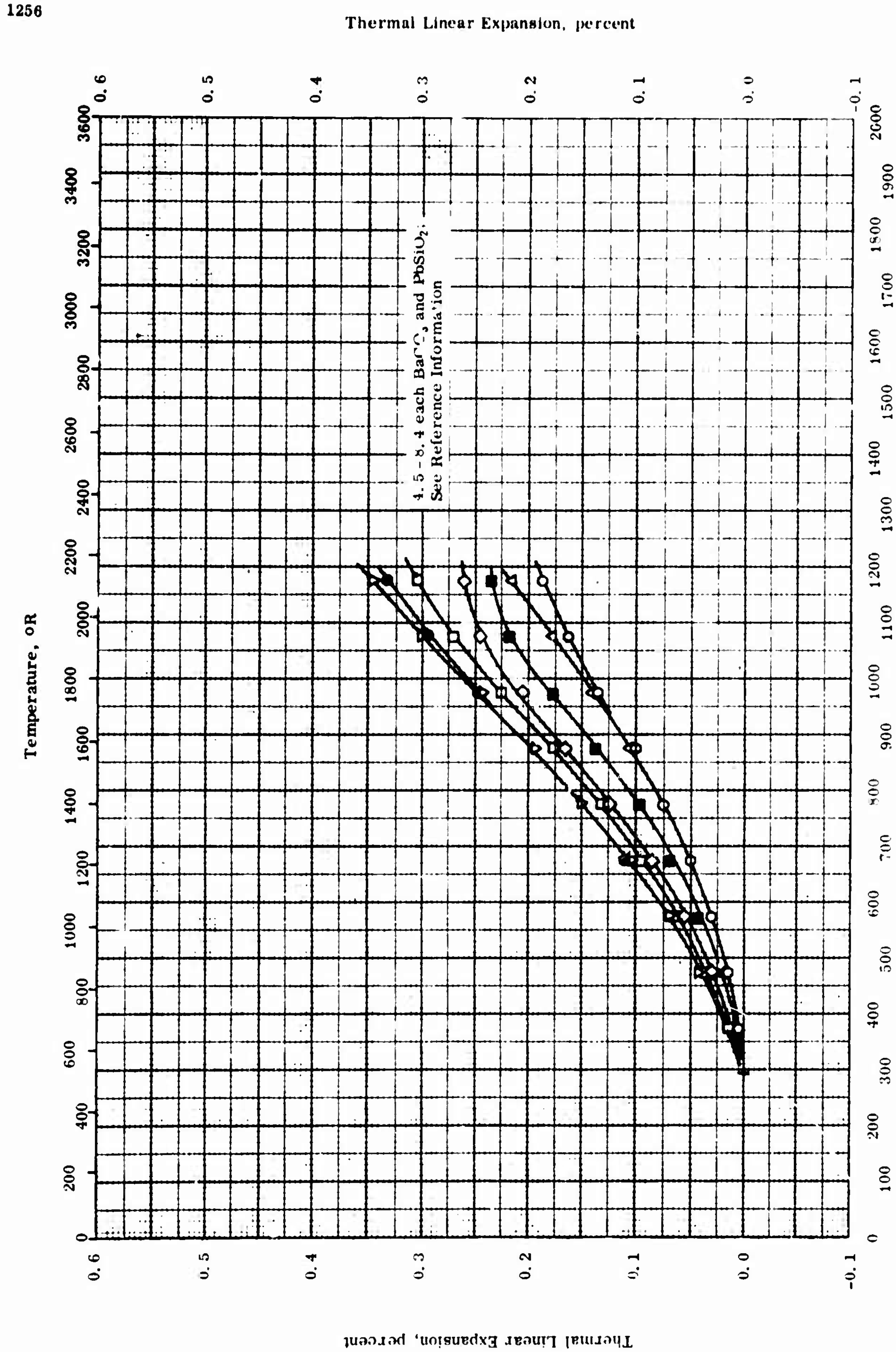


THERMAL LINEAR EXPANSION -- LEAD MAGNESIUM ALUMINUM SILICATE
(Dense lead cordierite)

THERMAL LINEAR EXPANSION -- LEAD MAGNESIUM ALUMINUM SILICATE
(Dense lead cordierite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-40	373-1173		68.2 E. P. K., 22.7 Yellowstone talc, and 9.1 $PbSiO_3$; absorption 0.6%.	Fired at 1260 C.
□	54-40	373-1173		66.2 E. P. K., 20.0 Yellowstone talc, 9.2 $PbSiO_3$, and 4.6 $MgCO_3$; absorption 0.8%.	Fired at 1275 C.
△	54-40	373-1173		45.4 E. P. K., 45.4 Sierralite, and 9.1 $PbSiO_3$; absorption 0.1%.	Fired at 1149 C.
◇	54-40	373-1173		45.4 E. P. K., 37.1 Sierralite, 9.1 $PbSiO_3$, and 8.4 Yellowstone talc; absorption 0.1%.	Fired at 1149 C.

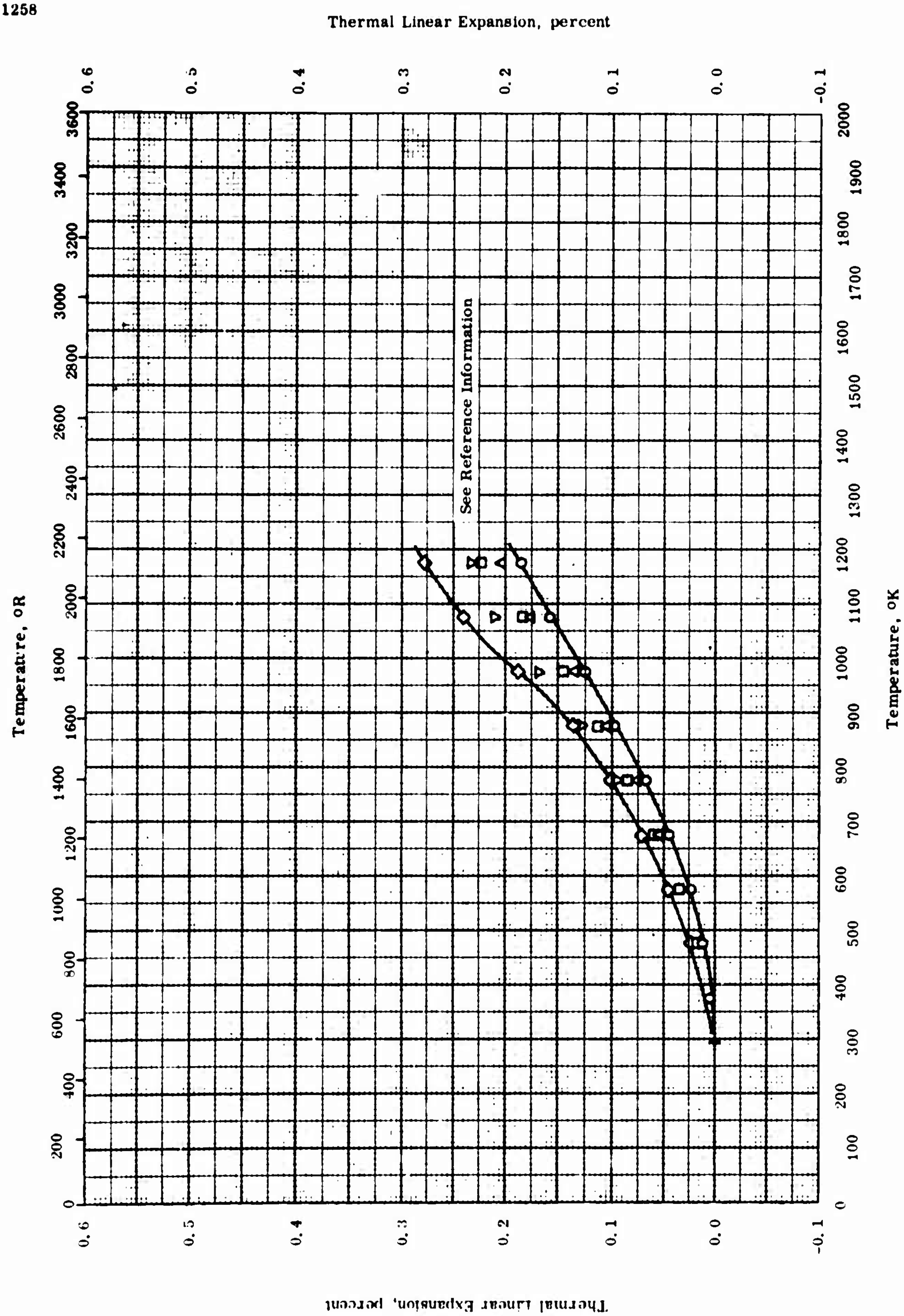


THERMAL LINEAR EXPANSION -- LEAD-BARIUM MAGNESIUM ALUMINUM SILICATE
(Low density lead-barium cordierite)

THERMAL LINEAR EXPANSION -- LEAD-BARIUM MAGNESIUM ALUMINUM SILICATE
(Low density lead-barium cordierite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-40	373-1173		60.4 E. P. K., 18.3 Yellowstone talc, and 8.4 each $BaCO_3$, $PbSiO_3$, and 4.6 $MgCO_3$; absorption 7.3%.	Fired at 1275 C.
□	54-40	373-1173		41.7 E. P. K., 41.7 Sierralite, and 8.3 each $BaCO_3$, $PbSiO_3$; absorption 10.8%.	Fired at 1232 C.
△	54-40	373-1173		61.7 E. P. K., 15.8 $MgCO_3$, 13.4 Yellowstone talc, and 4.5 each $BaCO_3$, $PbSiO_3$; absorption 10.9%.	Fired at 1316 C.
◇	54-40	373-1173		41.7 E. P. K., 34 Sierralite, 8.3 each $BaCO_3$, $PbSiO_3$, and 7.7 Yellowstone talc; absorption 6.7%.	Fired at 1219 C.
▽	54-40	373-1173		40 Yellowstone talc, 37.3 E. P. K., 13.6 Al_2O_3, and 4.5 each $BaCO_3$, $PbSiO_3$; absorption 9.6%.	Fired at 1260 C.
●	54-40	373-1173		36.7 Yellowstone talc, 34.2 E. P. K., 12.5 Al_2O_3, and 8.3 each $BaCO_3$, $PbSiO_3$; absorption 11.5%.	Fired at 1246 C.
■	54-40	373-1173		56.6 E. P. K., 14.5 $MgCO_3$, 12.3 Yellowstone talc, and 8.3 each $BaCO_3$, $PbSiO_3$; absorption 15.8%.	Fired at 1260 C.

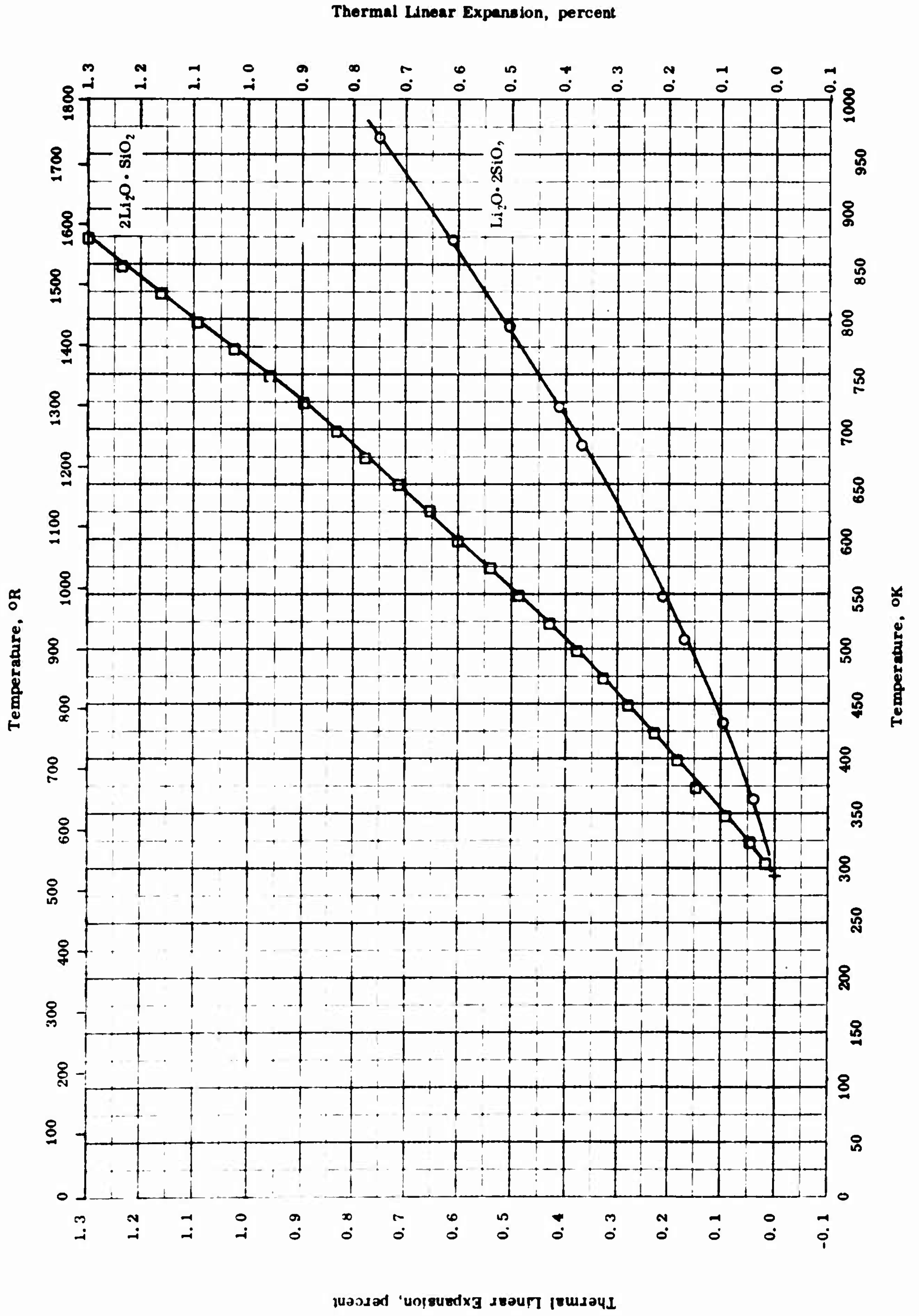


THERMAL LINEAR EXPANSION -- LEAD-BARIUM MAGNESIUM ALUMINUM SILICATE
(High density lead-barium cordierite)

THERMAL LINEAR EXPANSION -- LEAD-BARIUM MAGNESIUM ALUMINUM SILICATE
(High density lead-barium cordierite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-40	373-1173		62.5 E. P. K., 20.8 Yellowstone talc, and 8.3 each $BaCO_3$, $PbSiO_3$; absorption 0.3%.	Fired at 1260 C.
□	54-40	373-1173		68.2 E. P. K., 22.7 Yellowstone talc, and 4.5 each $BaCO_3$, $PbSiO_3$; absorption 0.6%.	Fired at 1260 C.
△	54-40	373-1173		65.9 E. P. K., 20.0 Yellowstone talc, 5 $MgCO_3$, and 4.5 each $BaCO_3$, $PbSiO_3$; absorption 0.7%.	Fired at 1275 C.
◇	54-40	373-1173		45.5 E. P. K., Sierralite, and 4.5 each $BaCO_3$. $PbSiO_3$; absorption 0.7%.	Fired at 1246 C.
▽	54-40	373-1173		45.6 E. P. K., 37.1 Sierralite, 8.4 Yellowstone talc, and 4.5 each $BaCO_3$, $PbSiO_3$; absorption 0.8%.	Fired at 1204 C.

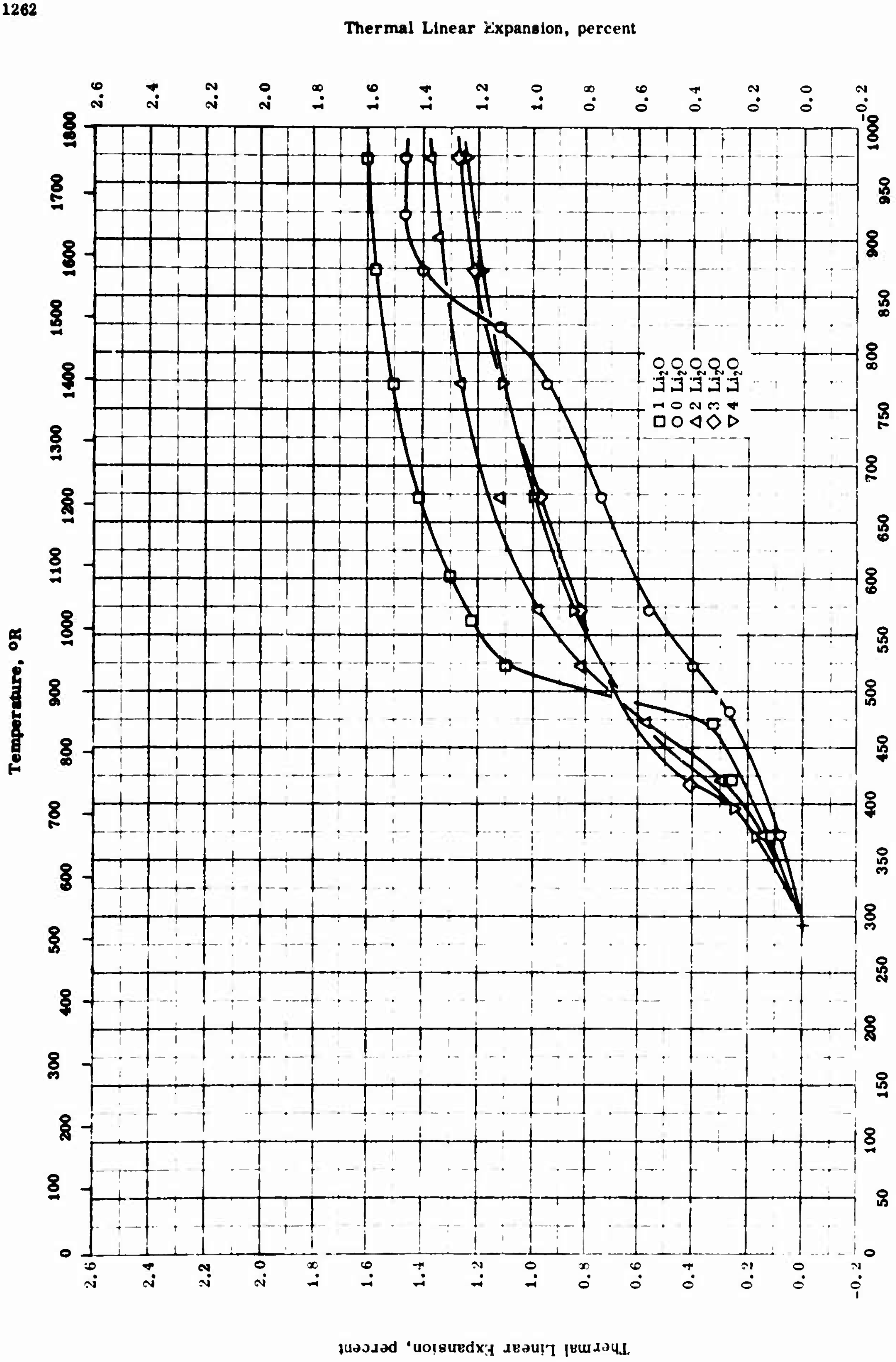


THERMAL LINEAR EXPANSION -- LITHIUM SILICATES

THERMAL LINEAR EXPANSION -- LITHIUM SILICATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-18	293-963	2	$Li_2O \cdot 2SiO_2$; x-ray diffration analysis indicated the presence of $Li_2O \cdot 2SiO_2$ and moderate amount of $Li_2O \cdot SiO_2$ and quartz; dimensions 4 in. long and 7/16 in. square.	Li_2CO_3 and SiO_2 heated together to drive off CO_2, heated slowly to 1100 C for 4 hrs, crushed and ball milled for 36 hrs, mixed with 15% binder solution (40 g Carbowax 20 M, 20 cc Methocel solution and 40 cc H_2O), pressed at 5000 psi, and fired at 900 C; measured with heating rate of 2 C min^{-1}.
□	64-20	303-873		$2Li_2O \cdot SiO_2$ (Li_4SiO_4); prepared from Fisher-Certified reagent grade Li_2CO_3 and 99.9 SiO_2 from Wedron Silica Co.	Wet-mixed under alcohol, heated at 120 C hr^{-1} to 1100 C, held at 1100 C for 20 hrs, pressed at 5000 psi, and refired at 1100 C for 3 hrs; measured with heating rate of 2.5 C min^{-1}.

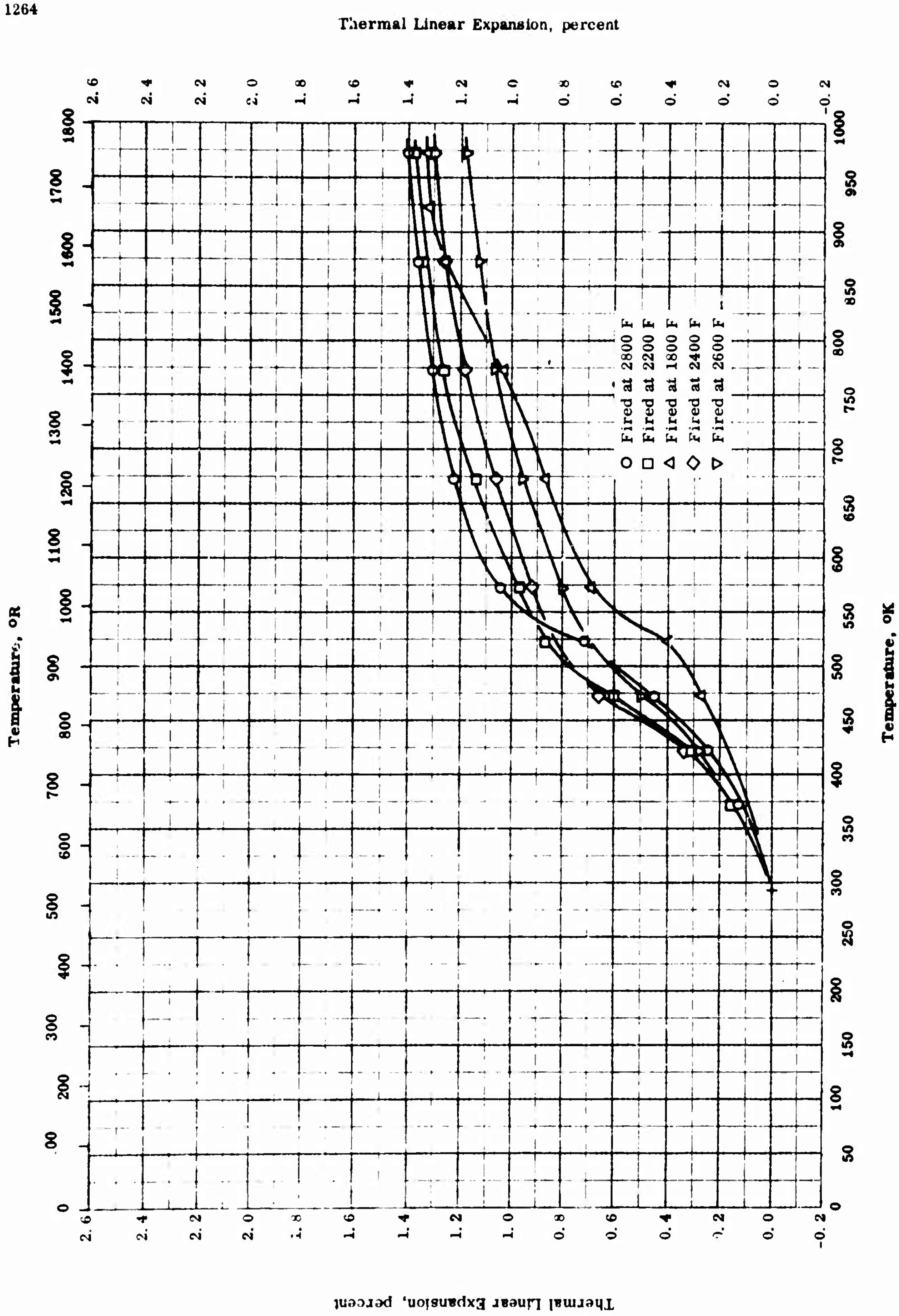


THERMAL LINEAR EXPANSION -- LITHIUM SILICATE - QUARTZ BODY
(Effect of composition)

THERMAL LINEAR EXPANSION -- LITHIUM SILICATE - QUARTZ BODY
(Effect of composition)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-34	293-973		100 SiO_2 (flint).	Fired 5 hrs to 2200 F and soaked 1 hr; measured with heating rate of 2-3 C min^{-1}.
□	54-34	293-973		99 SiO_2 and 1 Li_2O; prepared from flint and Li_2CO_3.	Same as above.
△	54-34	293-973		98 SiO_2 and 2 Li_2O; prepared from flint and Li_2CO_3.	Same as above.
◇	54-34	293-973		97 SiO_2 and 3 Li_2O; prepared from flint and Li_2CO_3.	Same as above.
▽	54-34	293-973		96 SiO_2 and 4 Li_2O; prepared from flint and Li_2CO_3.	Same as above.

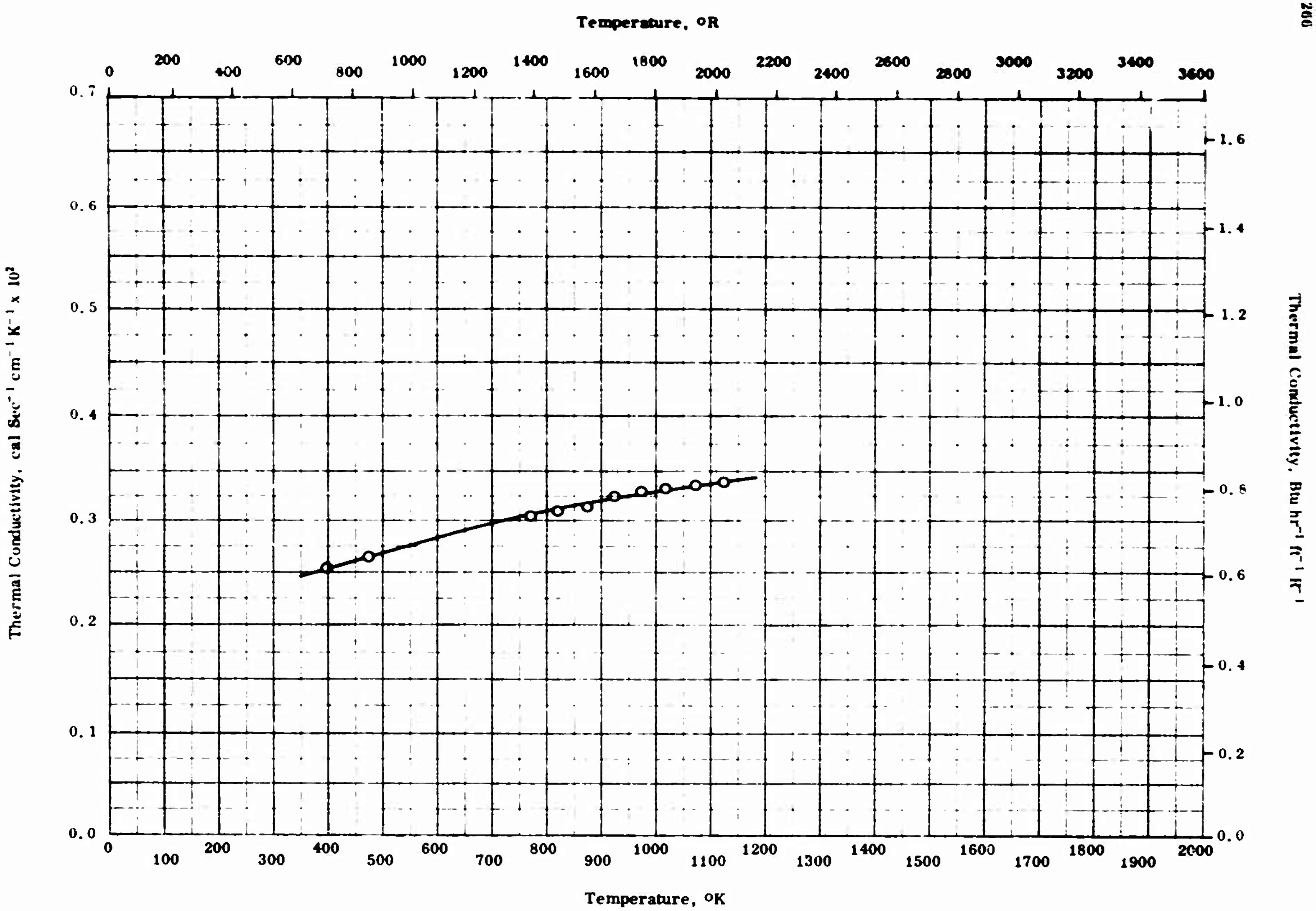


THERMAL LINEAR EXPANSION -- LITHIUM SILICATE - QUARTZ BODY
(Effect of firing temperature)

THERMAL LINEAR EXPANSION -- LITHIUM SILICATE - QUARTZ BODY
(Effect of firing temperature)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-34	293-973		98 SiO_2 and 2 Li_2O; prepared from potter's flint and Li_2CO_3; flint composition: 99.4 SiO_2, 0.18 Al_2O_3, 0.10 CaO, 0.06 MgO and Fe_2O_3, and 0.03 TiO_2; Li_2CO_3 contained 0.80 alkalines, 0.2 LiCl, and 0.01 Fe_2O_3.	Fired to 2800 F in 5 hrs and soaked for 1 hr; measured with heating rate of 2-3 C min^{-1}.
□	54-34	293-973		Same as above.	Same as above except fired at 2200 F.
△	54-34	293-973		Same as above.	Same as above except fired at 1800 F.
◇	54-34	293-973		Same as above.	Same as above except fired at 2400 F.
▽	54-34	293-973		Same as above.	Same as above except fired at 2600 F.

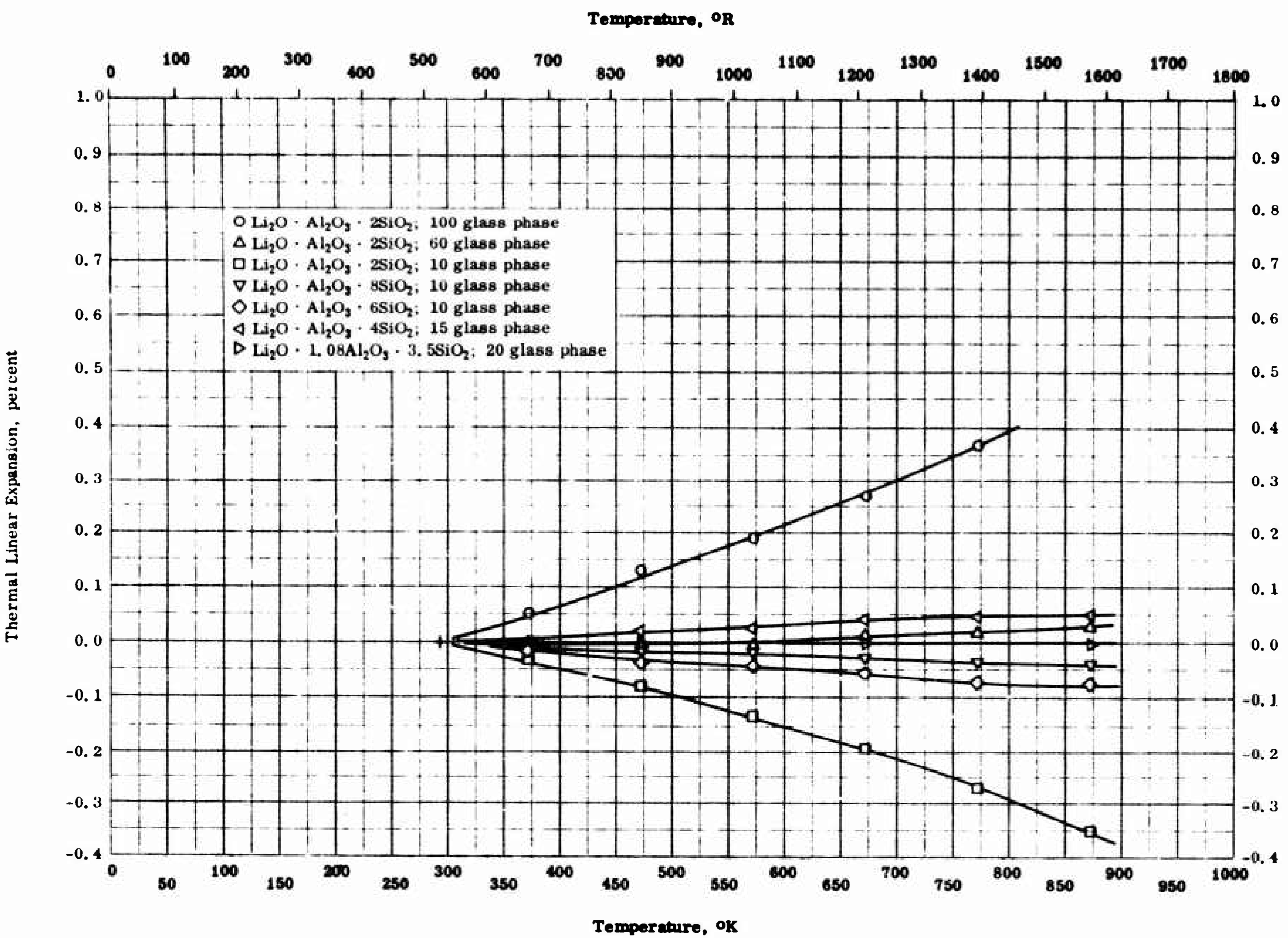


THERMAL CONDUCTIVITY -- LITHIUM ALUMINUM SILICATE
(Lithium feldspar)

THERMAL CONDUCTIVITY -- LITHIUM ALUMINUM SILICATE
(Lithium feldspar)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	55-5	398-1123		β-Spodumene; 57.8 pottery flint, 24.5 Al_2O_3, and 17.7 Li_2CO_3.	Fired 5 hrs at 1345 C.

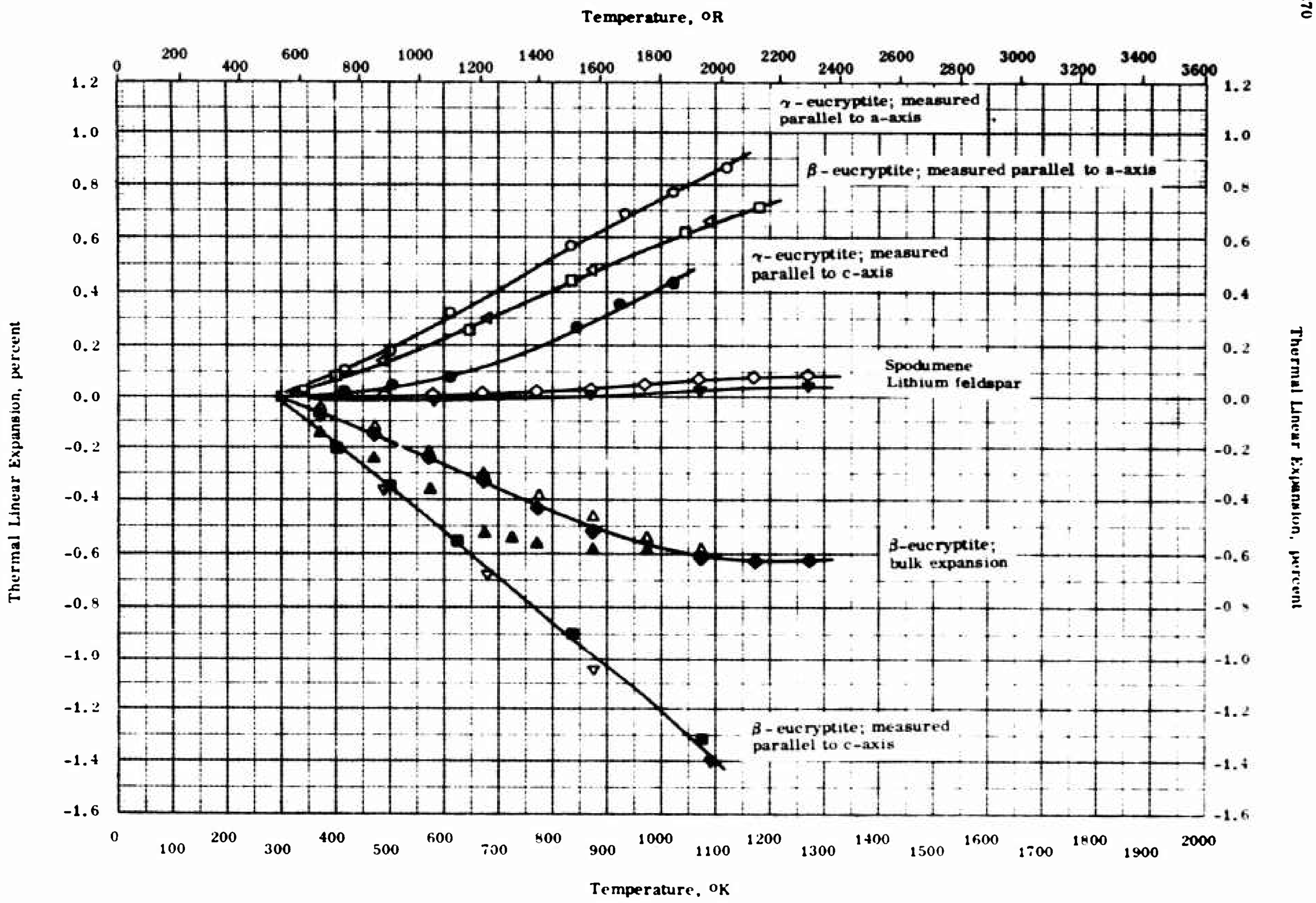


THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE
(With 10 - 100 glass phase)

THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE
(With 10 - 100 glass phase)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-40	293-773		$Li_2O \cdot Al_2O_3 \cdot 2SiO_2$; 100 glass phase.	Fired 1 hr at 1450 C.
△	55-40	293-873		Same as above; 40 crystals of eucryptite and 60 glass.	Fired 1 hr at 1150 C.
□	55-40	293-873		Same as above; 90 crystals of eucryptite and 10 glass.	Fired 1/2 hr at 1150 C.
▽	55-40	293-873		$Li_2O \cdot Al_2O_3 \cdot 8SiO_2$; 85 petalite, 5 α-Al_2O_3, and 10 glass phase.	Fired 1/2 hr at 1150 C.
◇	55-40	293-873		$Li_2O \cdot Al_2O_3 \cdot 6SiO_2$; 90 crystals and 10 glass phase.	Fired 1/2 hr at 1150 C.
◁	55-40	293-873		$Li_2O \cdot Al_2O_3 \cdot 4SiO_2$; 80 crystals of spodumeme, 15 glass, and 5 not given.	Fired 1/2 hr at 1150 C.
▷	55-40	293-873		$Li_2O \cdot 1.08Al_2O_3 \cdot 3.5SiO_2$; 80 crystals of eucryptite and 20 glass.	Fired 1/2 hr at 1150 C.



THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATES
(Eucryptite, feldspar, and spodumene)

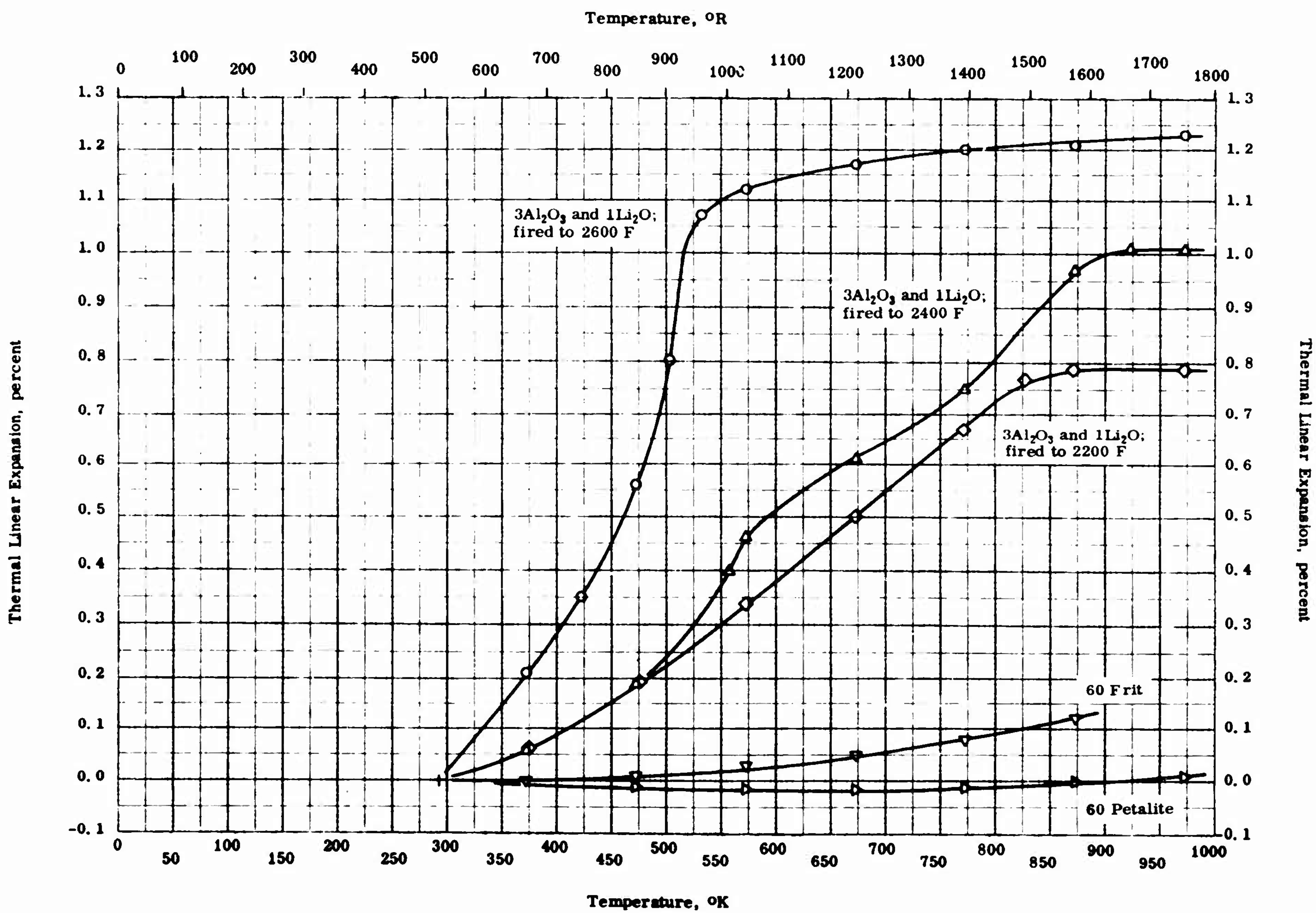
REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
◁	59-19	293-1090		$Li_2O \cdot Al_2O_3 \cdot 2SiO_2$, β-eucryptite; prepared from a chemically pure stoichiometric mixture.	Crystallized at 1300 C for 4 hrs; measured parallel to a-axis with x-ray diffractometer.
▽	59-19	293-1090		Same as above.	Same as above except measured parallel to c-axis.
△	59-19	293-1073		Same as above.	Same as above except measured bulk expansion.
▲	59-19	373-1073		Same as above.	Cooling cycle for above sample.
□	64-25	301-1181		$Li_2O \cdot Al_2O_3 \cdot 2SiO_2$, β-eucryptite; prepared from chemically pure lithium carbonate, aluminum hydroxide, and silicic acid.	Weighed batches wet mixed in acetone, dried, heated at 800 C for 24 hrs with intermediate grinding to ensure thorough mixing, melted at 1150 C for 24 hrs, and quenched; measured along a-axis by x-ray diffraction using (426) and (514) reflections from CuKα radiation; percent expansion calculated from lattice parameters.
■	64-25	301-1073		Same as above.	Same as above except measured along c-axis.
○	64-25	297-1121		$Li_2O \cdot Al_2O_3 \cdot 2SiO_2$, α- eucryptite; prepared from chemically pure lithium carbonate, aluminum hydroxide, and silicic acid.	β-eucryptite prepared as above; α-eucryptite prepared from β-eucryptite by hydrothermal heat treatment at 700 C under 1 Kbar pressure for 2 days; measured along a-axis by x-ray diffraction using (925) and (763) reflections from CuKα radiation; percent expansion calculated from lattice parameters.
●	64-25	293-1025		Same as above. (continued onto next page)	Same as above except measured along c-axis.

THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATES
(Eucryptite, feldspar, and spodumene)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
◇	51-24	293-1273		$Li_2O \cdot Al_2O_3 \cdot 4SiO_2$, spodumene; 64.6 SiO_2, 27.4 Al_2O_3, and 8.0 Li_2O; prepared from chemically pure Li_2CO_3, Al_2O_3, and potter's flint.	100 mesh calcined material pressed at 1000 psi with Carbowax Methocel binder.
◆	51-24	293-1273		$Li_2O \cdot Al_2O_3 \cdot 2SiO$, eucryptite; 47.7 SiO_2, 40.5 Al_2O_3, and 11.8 Li_2O; raw materials same as above.	Same as above.
▼	51-24	293-1273		$Li_2O \cdot Al_2O_3 \cdot 6SiO_2$, lithium feldspar; 73.2 SiO_2, 20.7 Al_2O_3, and 6.1 Li_2O; raw materials same as above.	Same as above.

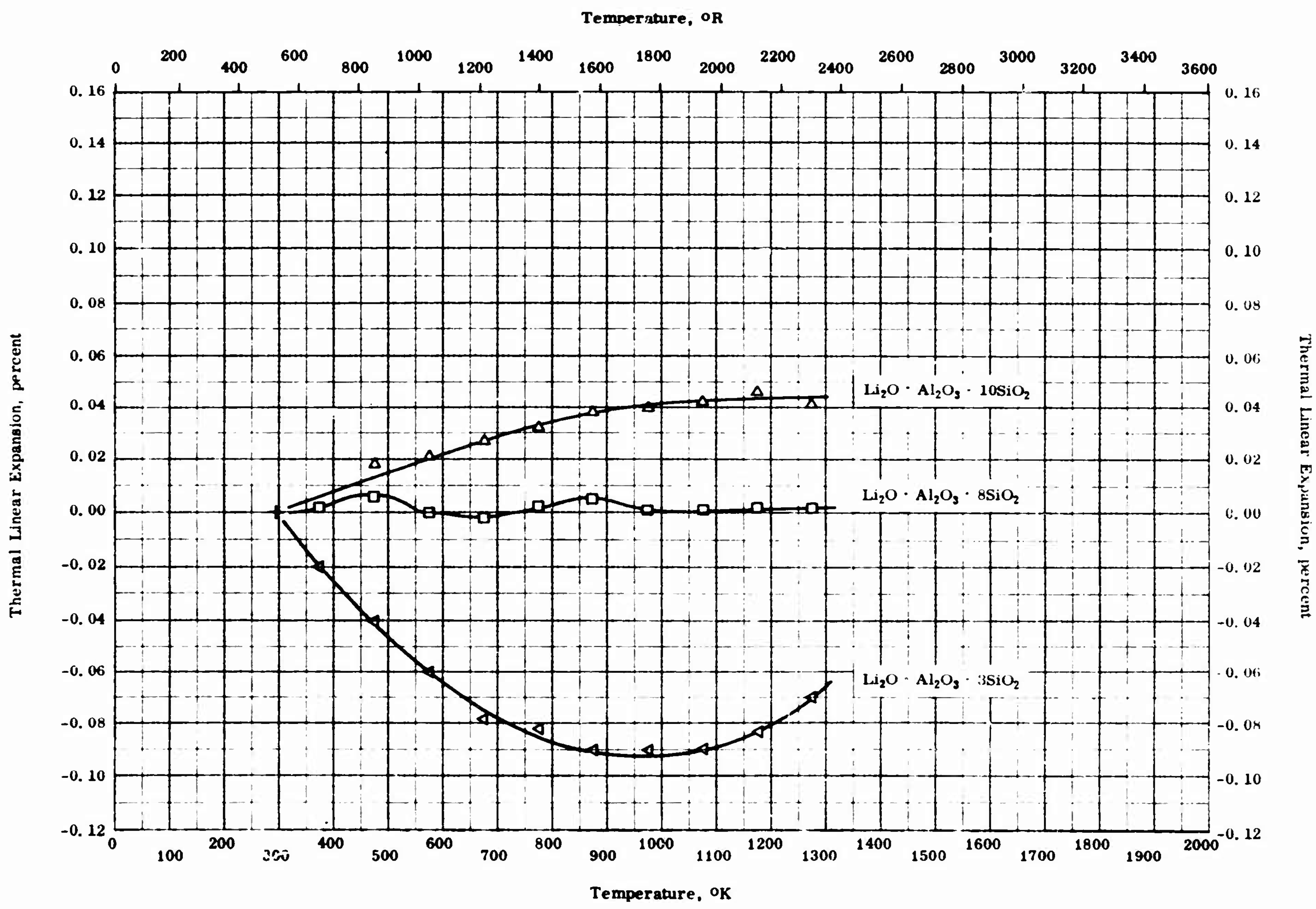


THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATES
(High SiO_2 content)

THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATES
(High SiO_2 content)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-34	293-973		96 SiO_2, 3 Al_2O_3, and 1 Li_2O; prepared from E. P. K. clay, flint, and Li_2CO_3.	Fired in 5 hrs to 2600 F and soaked 1 hr.
△	54-34	293-973		Same as above.	Fired in 5 hrs to 2400 F and soaked 1 hr.
◇	54-34	293-973		Same as above.	Fired in 5 hrs to 2200 F and soaked 1 hr.
▽	53-5	293-873		59. 8 QC6 frit, 38. 2 E. P. K. clay, and 2 $MgCO_3$; QC6 frit has oxide composition of 80 SiO_2, 12 Li_2O, 8 Al_2O_3 and is prepared from Li_2CO_3, E. P. K. clay and flint.	
▷	53-5	293-873		60 Petalite, 24. 4 QC6 frit, and 15. 6 E. P. K. clay; QC6 same as above.	

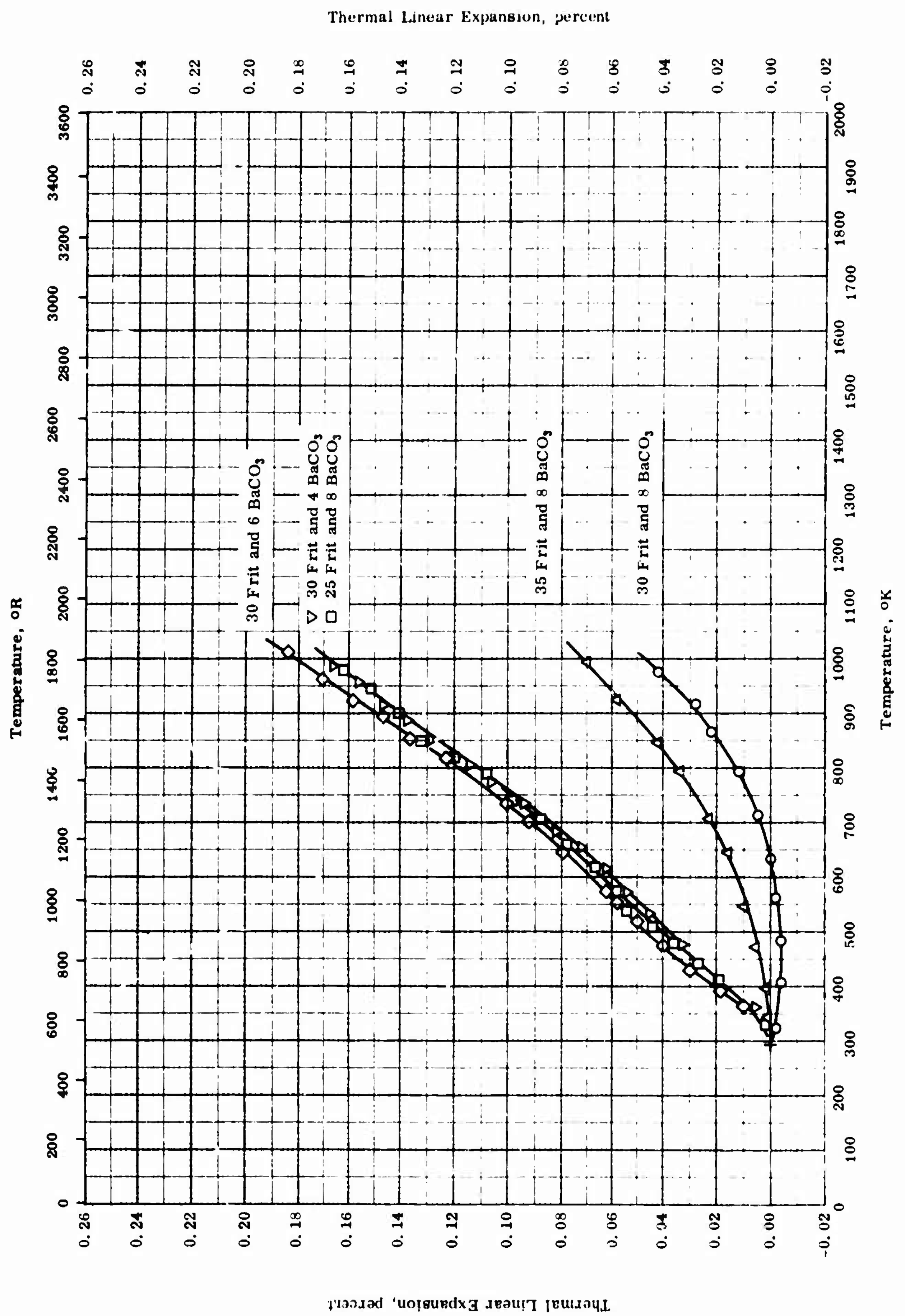


THERMAL LINEAR EXPANSION -- OTHER LITHIUM ALUMINUM SILICATES

THERMAL LINEAR EXPANSION -- OTHER LITHIUM ALUMINUM SILICATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	51-24	293-1273		$Li_2O \cdot Al_2O_3 \cdot 8SiO_2$; petalite prepared from c.p. Li_2CO_3, c.p. Al_2O_3, and potter's flint.	Pressed 100 mesh calcined material at 1000 lb in.$^{-2}$ with binder.
△	51-24	293-1273		$Li_2O \cdot Al_2O_3 \cdot 10SiO_2$; prepared from c.p. Li_2CO_3, c.p. Al_2O_3, and potter's flint.	Pressed 100 mesh calcined material at 1000 lb in.$^{-2}$ with binder.
◁	51-24	293-1273		$Li_2O \cdot Al_2O_3 \cdot 3SiO_2$; prepared from c.p. Li_2CO_3, c.p. Al_2O_3, and potter's flint.	Pressed from 100 mesh calcined material at 1000 lb in.$^{-2}$ with binder.

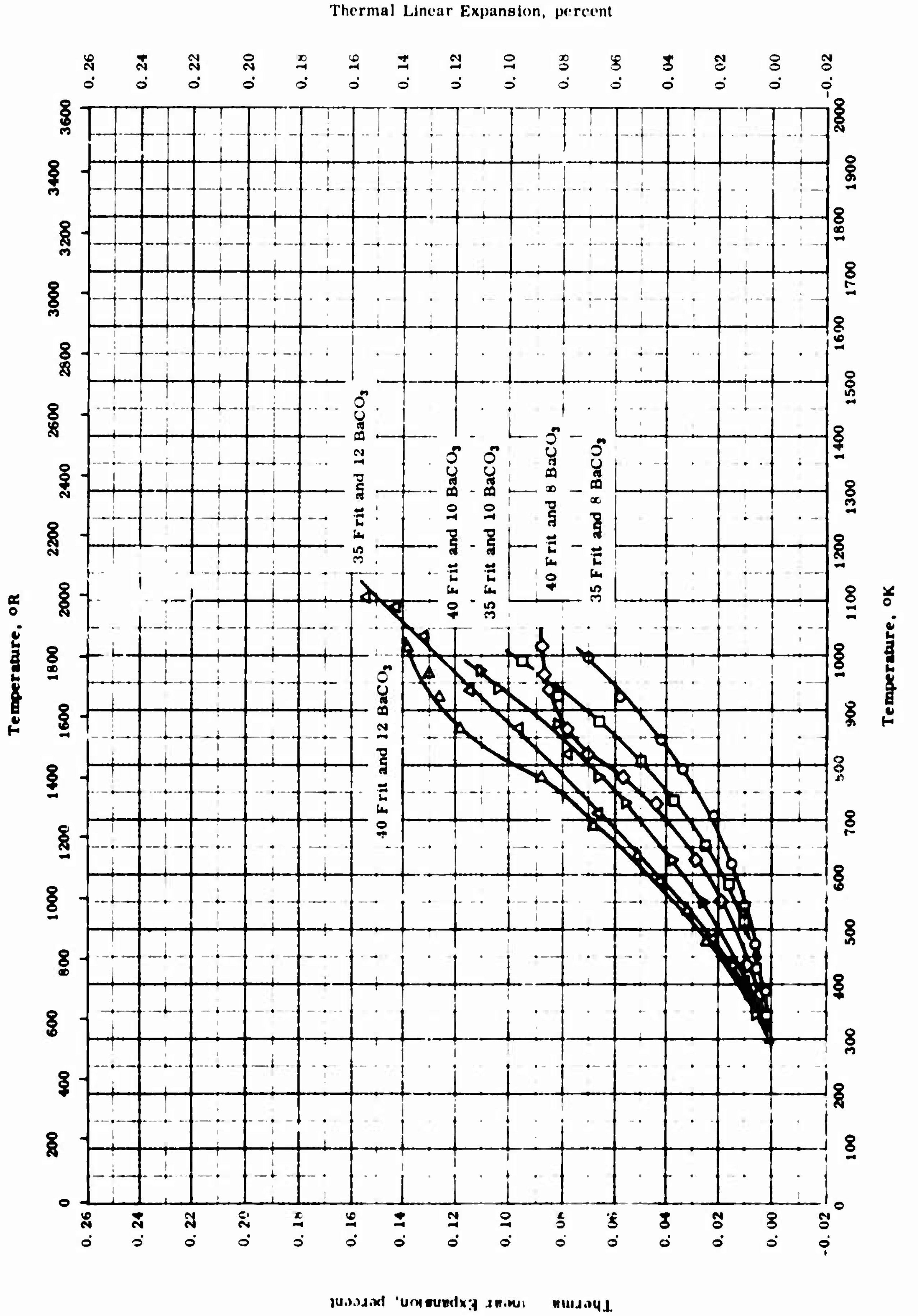


THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE BODIES, BARIUM MODIFIED
(25 - 35 Frit level)

THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE BODIES, BARIUM MODIFIED
(25 - 35 Frit level)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-3	293-976		62 E. P. K. clay, 30 QC6 frit, and 8 $BaCO_3$. QC6 frit has an oxide analysis of: 80 SiO_2, 12 Li_2O, 8 Al_2O_3 and is made from Li_2CO_3, E. P. K. clay, and flint.	Tested at 2 - 3 C min^{-1} rise.
□	53-3	293-980		67 E. P. K. clay, 25 QC6 frit, and 8 $BaCO_3$, same as above.	Same as above.
△	53-3	293-996		57 E. P. K. clay, 35 QC6 frit, and 8 $BaCO_3$, same as above.	Same as above.
◇	53-3	293-1012		64 E. P. K. clay, 30 QC6 frit, and 6 $BaCO_3$, same as above.	Same as above.
▽	53-3	293-989		66 E. P. K. clay, 30 QC6 frit, and 4 $BaCO_3$, same as above.	Same as above.

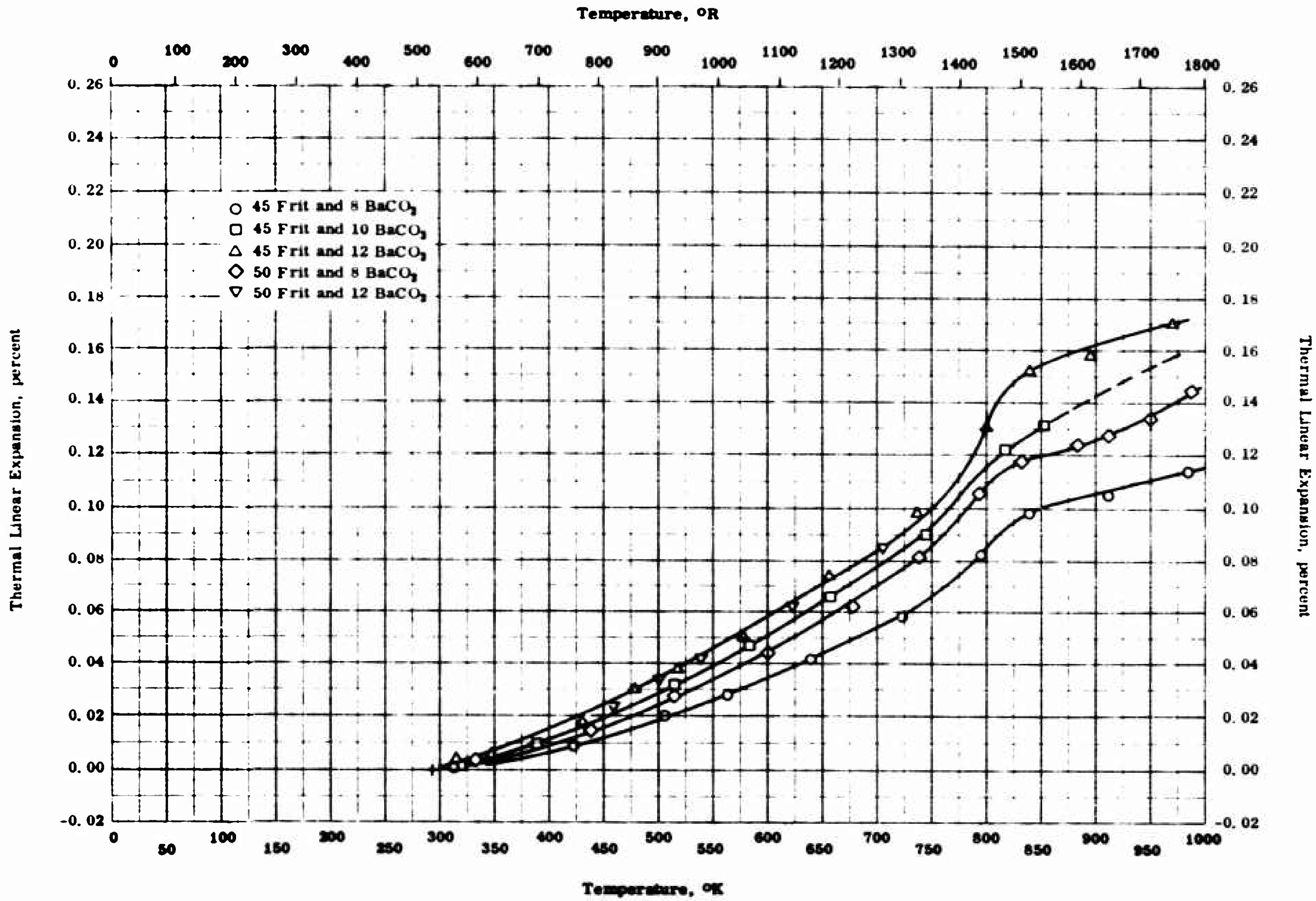


THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE BODIES, BARIUM MODIFIED
(35 - 40 Frit level)

THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE BODIES, BARIUM MODIFIED
(35 - 40 Frit level)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-6	312-996		57 clay (No. 4 blend), 35 QC6 frit, and 8 $BaCO_3$; frit has an oxide analysis of 80 SiO_2, 12 Li_2O, 8 Al_2O_3, and is prepared from Li_2CO_3, E. P. K. clay and flint; No. 4 blend clay is from United Clay Mines Corp.	Matured at 2200 F.
□	53-6	313-990		55 clay (No. 4 blend), 35 QC6 frit, and 10 $BaCO_3$; same as above.	Same as above.
△	53-6	306-1106		53 clay (No. 4 blend), 35 QC6 frit, and 12 $BaCO_3$; same as above.	Matured at 1880 F.
◇	53-6	315-1016		52 clay (No. 4 blend), 40 QC6 frit, and 8 $BaCO_3$; same as above.	Matured at 2000 F.
▽	53-6	312-971		50 clay (No. 4 blend), 40 QC6 frit, and 10 $BaCO_3$; same as above.	Matured at 1940 F.
▷	53-6	315-1013		48 clay (No. 4 blend), 40 QC6 frit, and 12 $BaCO_3$; same as above.	Matured at 1800 F.

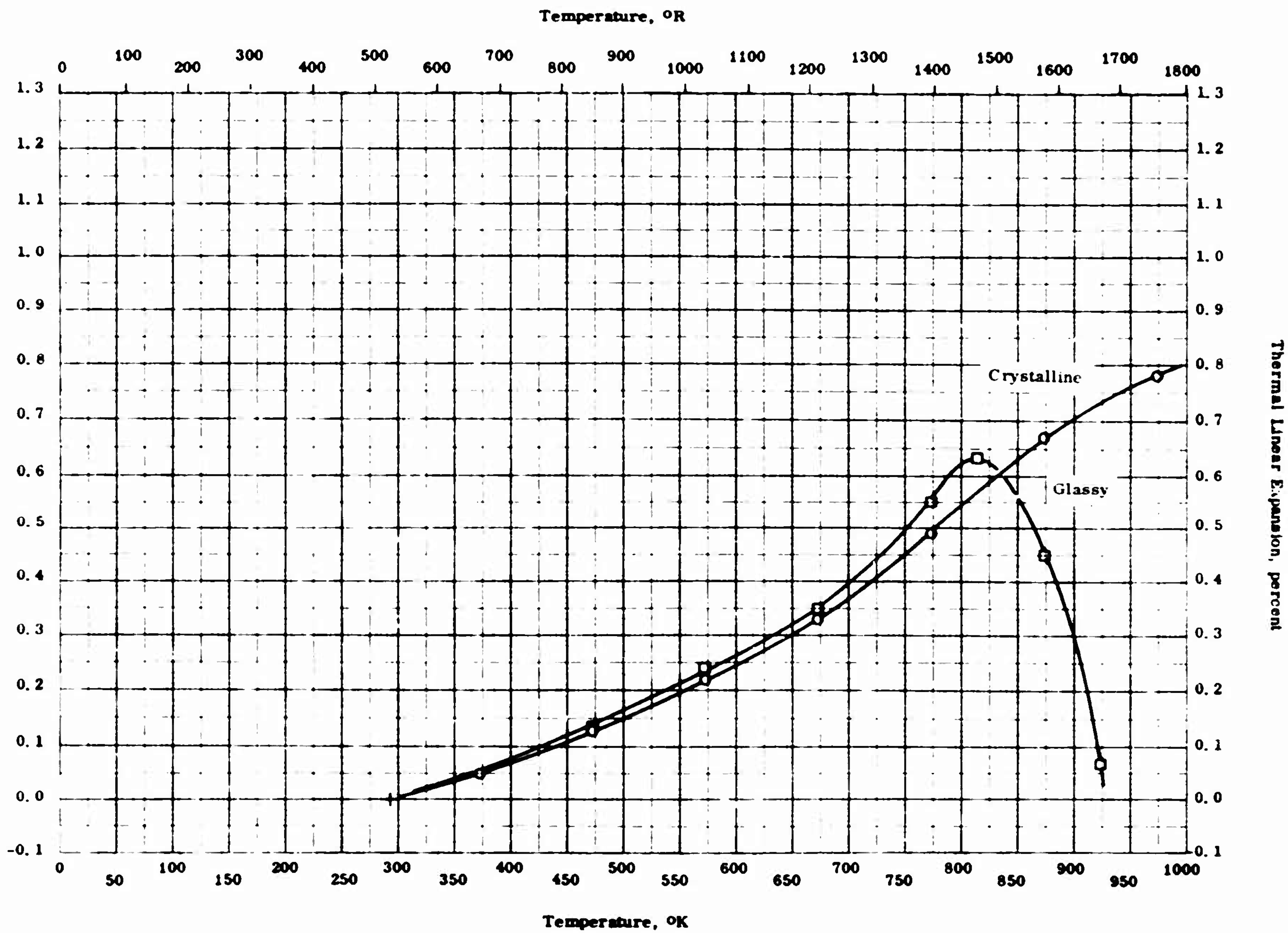


THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE BODIES, BARIUM MODIFIED
(45 - 50 Frit level)

THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE BODIES, BARIUM MODIFIED
(45 - 50 Frit level)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-6	313-985		47 clay (No. 4 blend), 45 QC6 frit, and 8 $BaCO_3$; QC6 frit has an oxide analysis of 80 SiO_2, 12 Li_2O, 8 Al_2O_3 and is prepared from Li_2CO_3, E. P. K. clay, and flint; No. 4 blend clay is from United Clay Mines Corp.	Matured at 1880 F.
□	53-6	318-852		45 clay (No. 4 blend), 45 QC6 frit, and 10 $BaCO_3$; same as above.	Matured at 1780 F.
△	53-6	315-971		45 QC6 frit, 43 clay (No. 4 blend), and 12 $BaCO_3$; same as above.	Same as above.
◇	53-6	315-987		50 QC6 frit, 42 clay (No. 4 blend), and 8 $BaCO_3$; same as above.	Matured at 1880 F.
▽	53-6	315-705		50 QC6 frit, 38 clay (No. 4 blend), and 12 $BaCO_3$; same as above.	Matured at 1780 F.



THERMAL LINEAR EXPANSION -- LITHIUM POTASSIUM ALUMINUM SILICATE

THERMAL LINEAR EXPANSION -- LITHIUM POTASSIUM ALUMINUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	41-8	293-973		Lithium potassium feldspar; 52.8 SiO_2, 26.77 Al_2O_3, 10.33 K_2O, 4.65 Li_2O, 3.68 F, 0.92 CaO, 0.59 MnO_2, 0.31 MgO, 0.19 Fe_2O_3, and 0.13 Na_2O; crystalline state.	Extruded rod plasticized with small amount of gum, air dried, oven dried at 230 F, and fired to cone 06.
□	41-8	293-923		Same as above; glassy state.	Annealed 1 hr at 10 C below softening point.

PROPERTIES OF MAGNESIUM SILICATES

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density	3.06	191
Melting Point	2183*	3929*

*Handbook of Chemistry and Physics (Ref. 64-16)

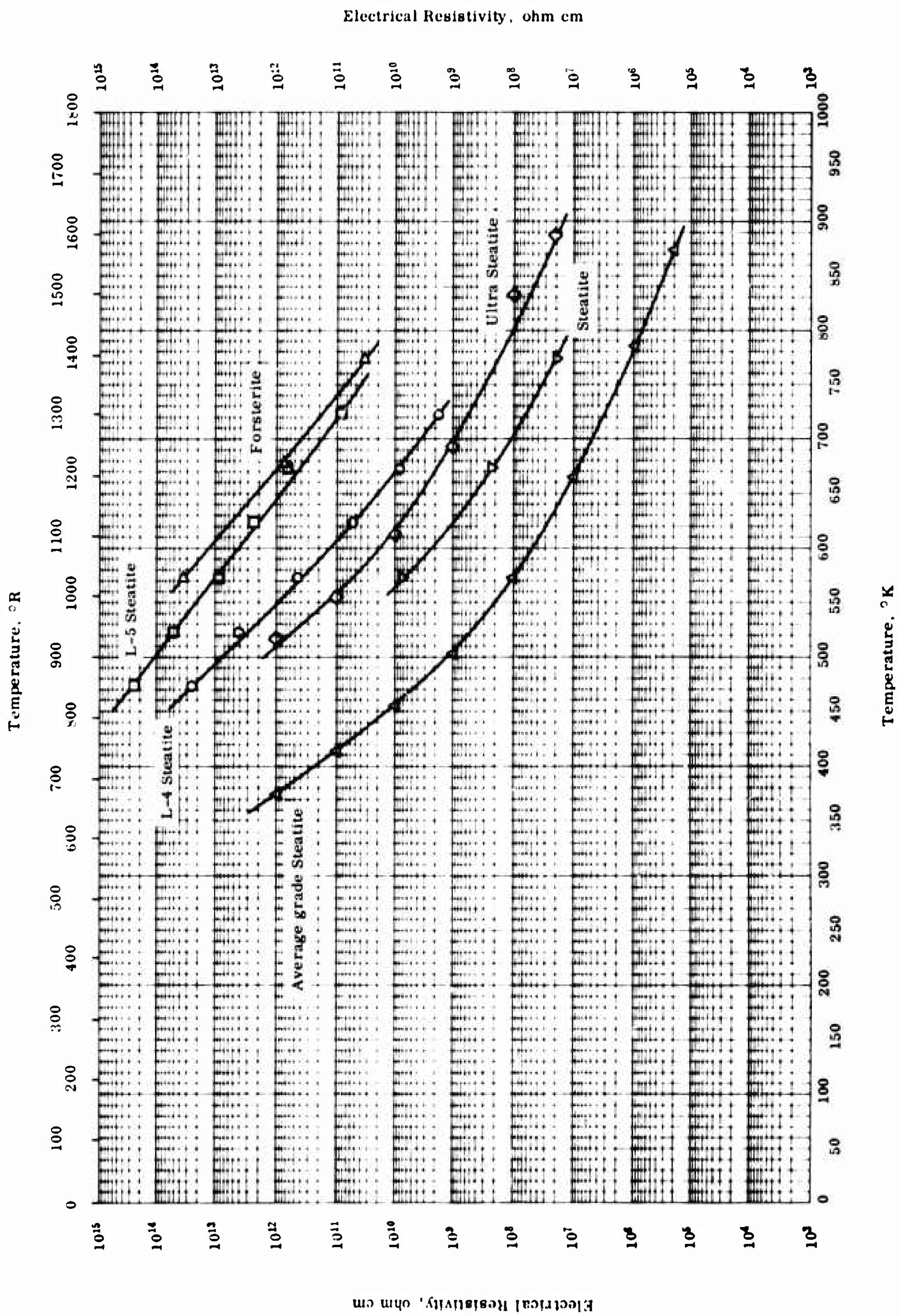
REPORTED VALUES

Density	g cm^{-3}	lb ft^{-3}
O Forsterite 243	3.056 ± 0.004	190.8 ± 0.2
▢ Steatite	2.796 ± 0.005	174.5 ± 0.3

PROPERTIES OF MAGNESIUM SILICATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-13	298		Forsterite 243.	Density by weight in air and in Kerosene.
□	57-13	298		Steatite.	Same as above.

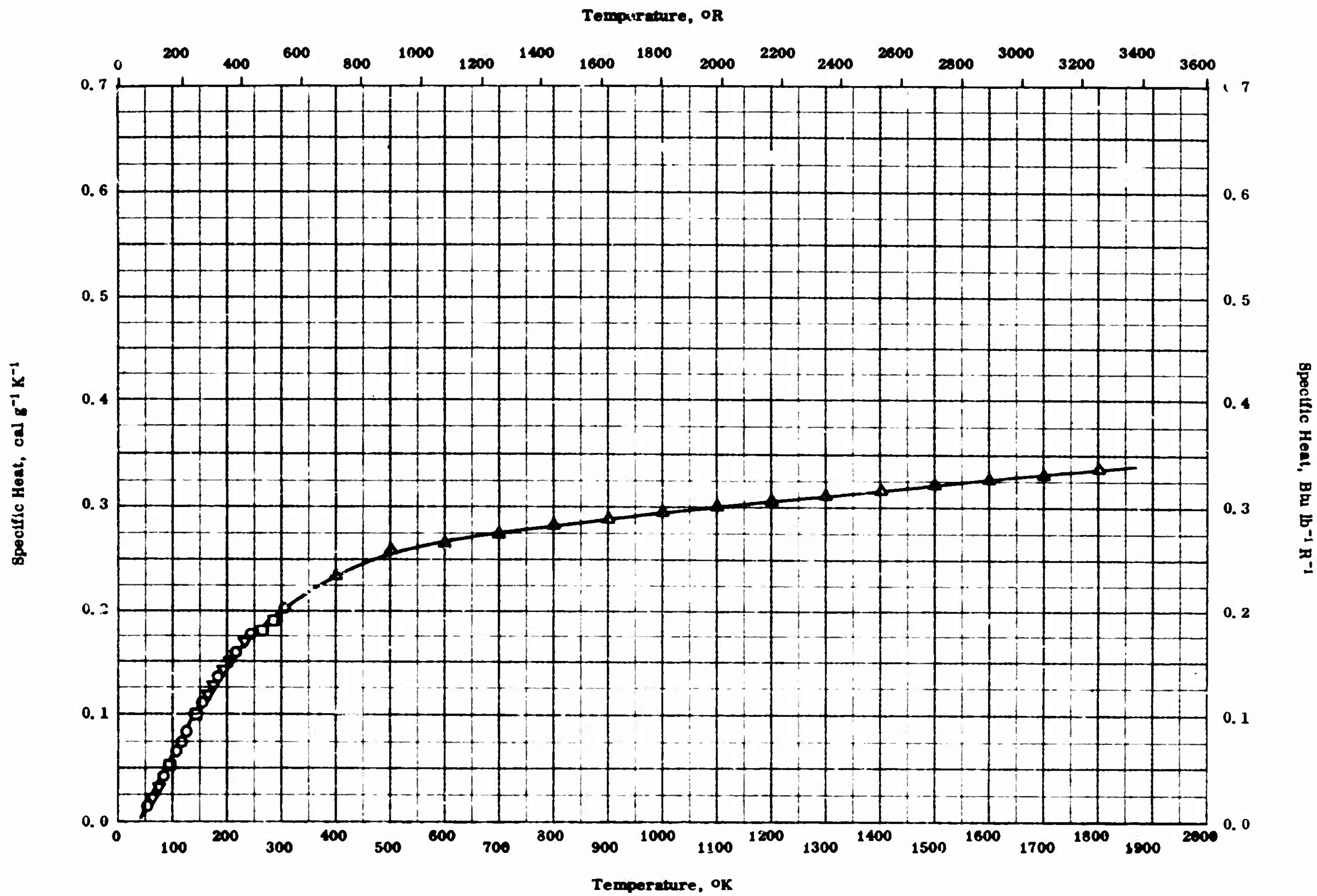


ELECTRICAL RESISTIVITY -- MAGNESIUM SILICATE

ELECTRICAL RESISTIVITY -- MAGNESIUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-19	473-723		Steatite; grade L-4, AlSiMag 196.	
□	54-19	473-723		Steatite; grade L-5, Pass and Seymour E-211-M.	
△	44-3	373-873		Commercial steatite; average grade.	
◇	44-3	518-923		Commercial ultra-steatite; low loss type.	
▽	56-14	573-773		Steatite.	
▷	56-14	573-773		Forsterite, Magnesium silicate.	

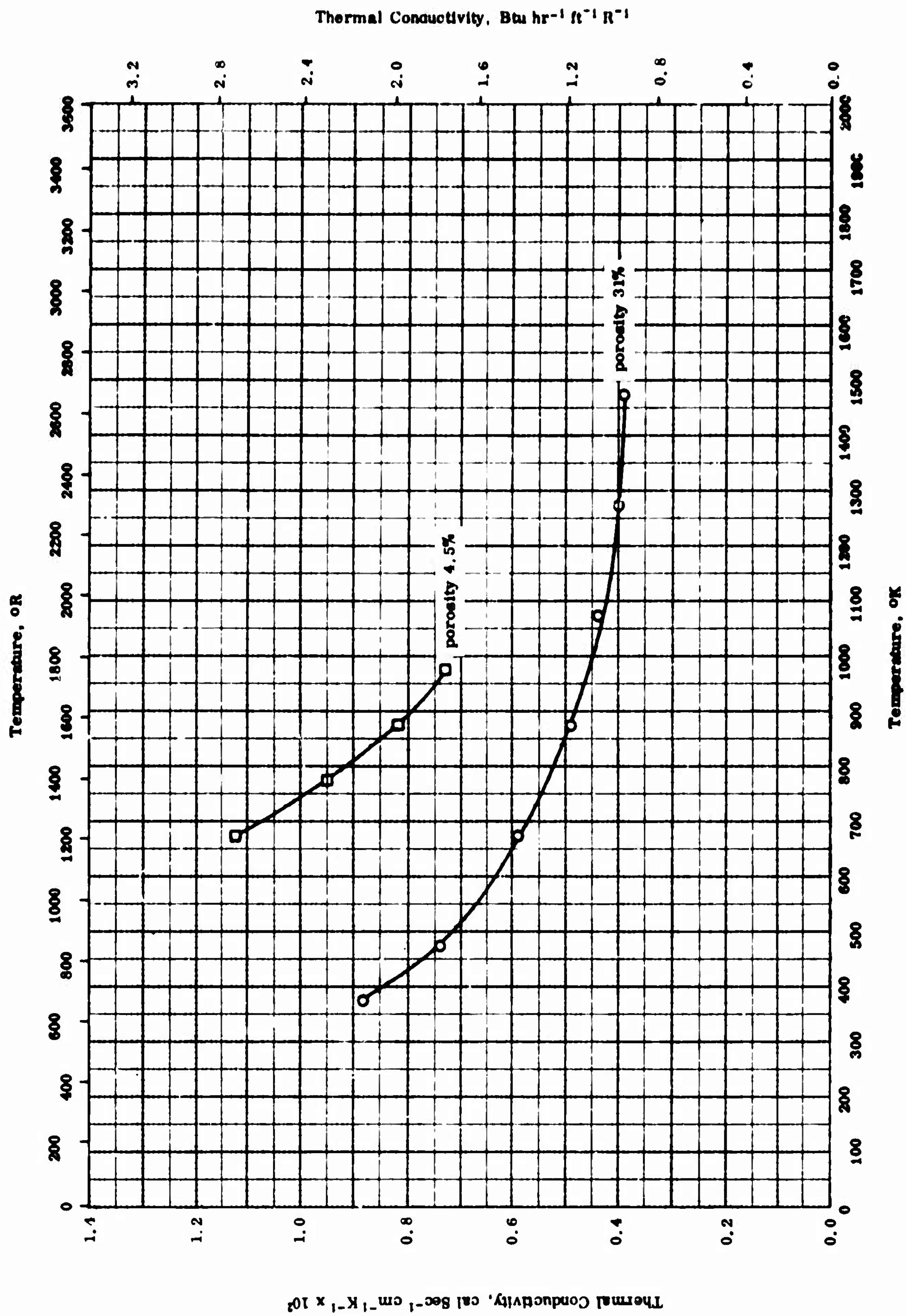


SPECIFIC HEAT -- MAGNESIUM SILICATES

SPECIFIC HEAT -- MAGNESIUM SILICATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-28	12-305	0.3	Talc, $Mg_3Si_4O_{10}(OH)_2$, ($3\,MgO \cdot 4\,SiO_2 \cdot H_2O$); 62.47 SiO_2, 31.76 MgO, 4.70 H_2O, 0.47 Al_2O_3, 0.45 FeO and 0.06 H_2O.	Dried at 115 C for 12 hrs.
□	43-6	53-295		Magnesium orthosilicate, Mg_2SiO_4; 98.6 Mg_2SiO_4, 0.8 uncombined MgO and no free silica or $MgSiO_3$.	
△	53-23	298-1808		Magnesium orthosilicate, Mg_2SiO_4; 57.51 MgO and 42.60 SiO_2.	
▽	43-6	53-296		Magnesium metasilicate, $MgSiO_3$; 92.0 $MgSiO_3$, 5.6 Mg_2SiO_4 and 2.4 uncombined silica.	Corrected for uncombined silica.

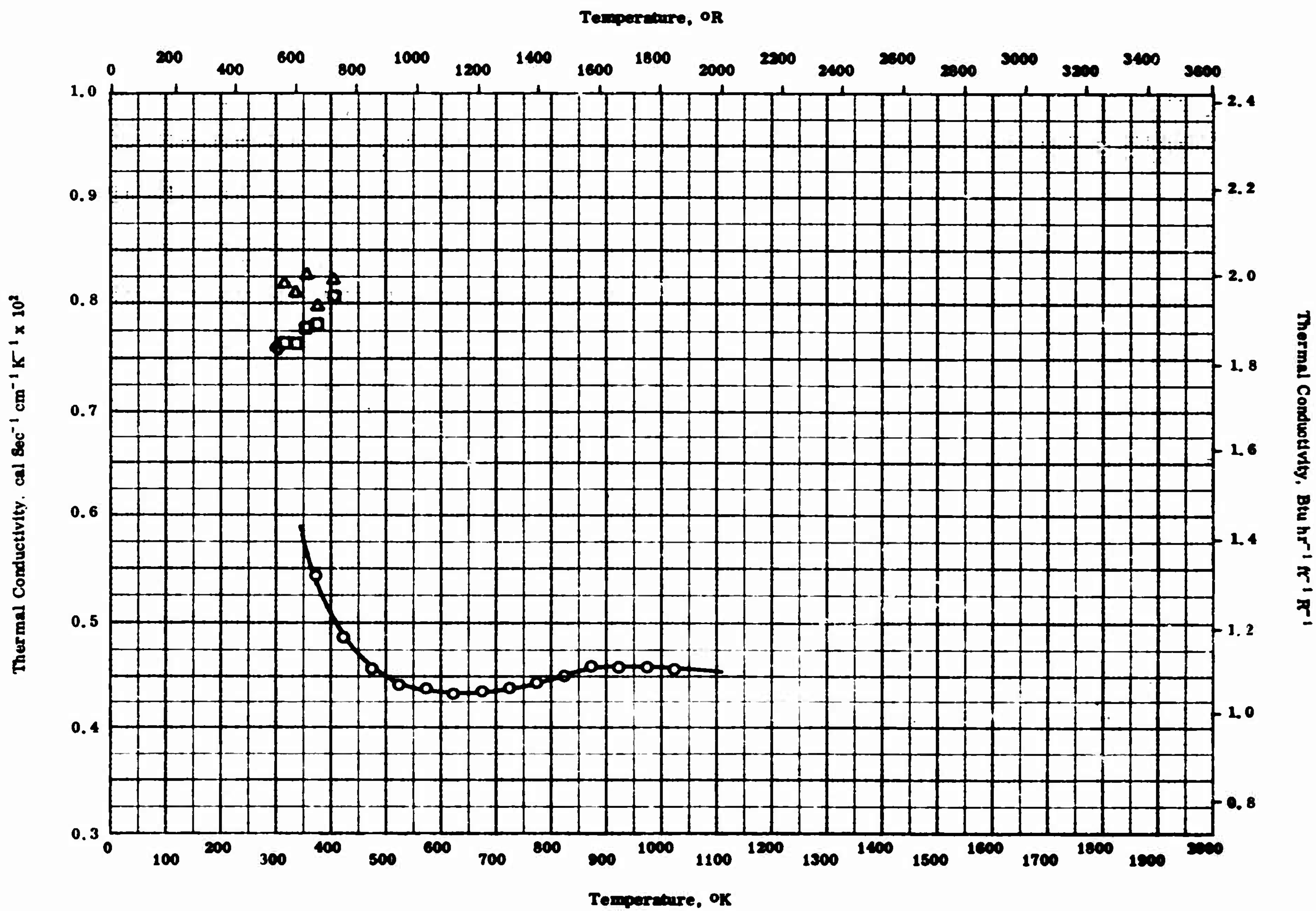


THERMAL CONDUCTIVITY -- MAGNESIUM ORTHOSILICATE

THERMAL CONDUCTIVITY -- MAGNESIUM ORTHOSILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-1	373-1473		Forsterite, 2 MgO·SiO_2; 59 MgO and 41 SiO_2; bulk density 139 lb ft^{-3} (cf theor density 200); porosity 31.1%.	Fired at 1650 C.
□	58-1	673-973		Forsterite; density 191 lb ft^{-3} and 4.5% porosity.	

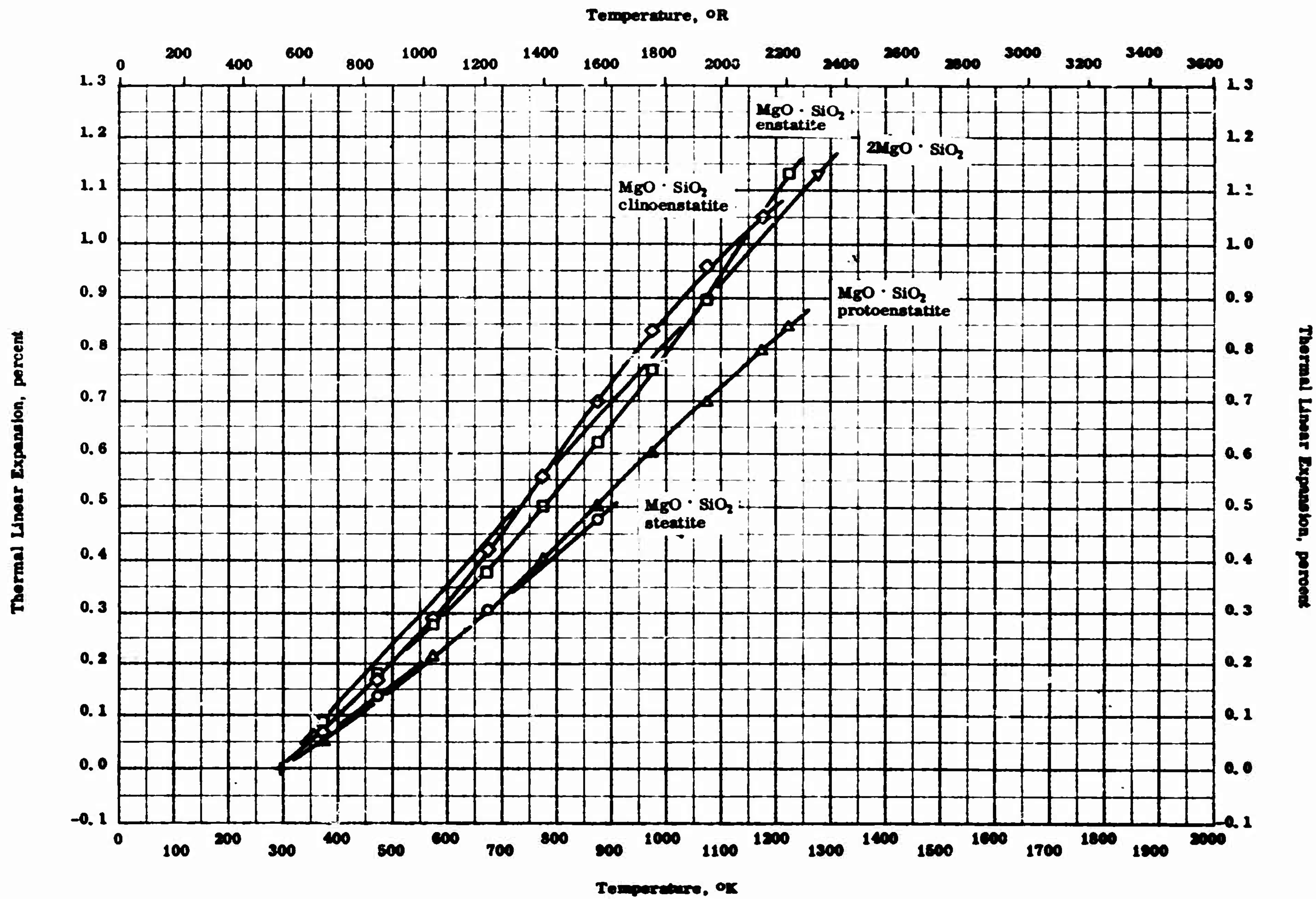


THERMAL CONDUCTIVITY -- MAGNESIUM SILICATE
(Steatite, fired)

THERMAL CONDUCTIVITY -- MAGNESIUM SILICATE
(Steatite, fired)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-5	373-1023		Steatite: 82 Manchurian talc, 10 Tenn. ball clay, 8 Maine feldspar, 1 binder; porosity 0.2%; density 2.56 g cm^{-3}.	Axial heat flow minimized during tests; fired 1 hr at 1305 C on pottery flint.
□	54-8	316-408		Commercial Steatite No. 12C-2.	
△	54-8	317-404		Steatite No. 10B-2.	
◇	57-13	303.4		Steatite.	



THERMAL LINEAR EXPANSION -- MAGNESIUM SILICATES

THERMAL LINEAR EXPANSION -- MAGNESIUM SILICATES

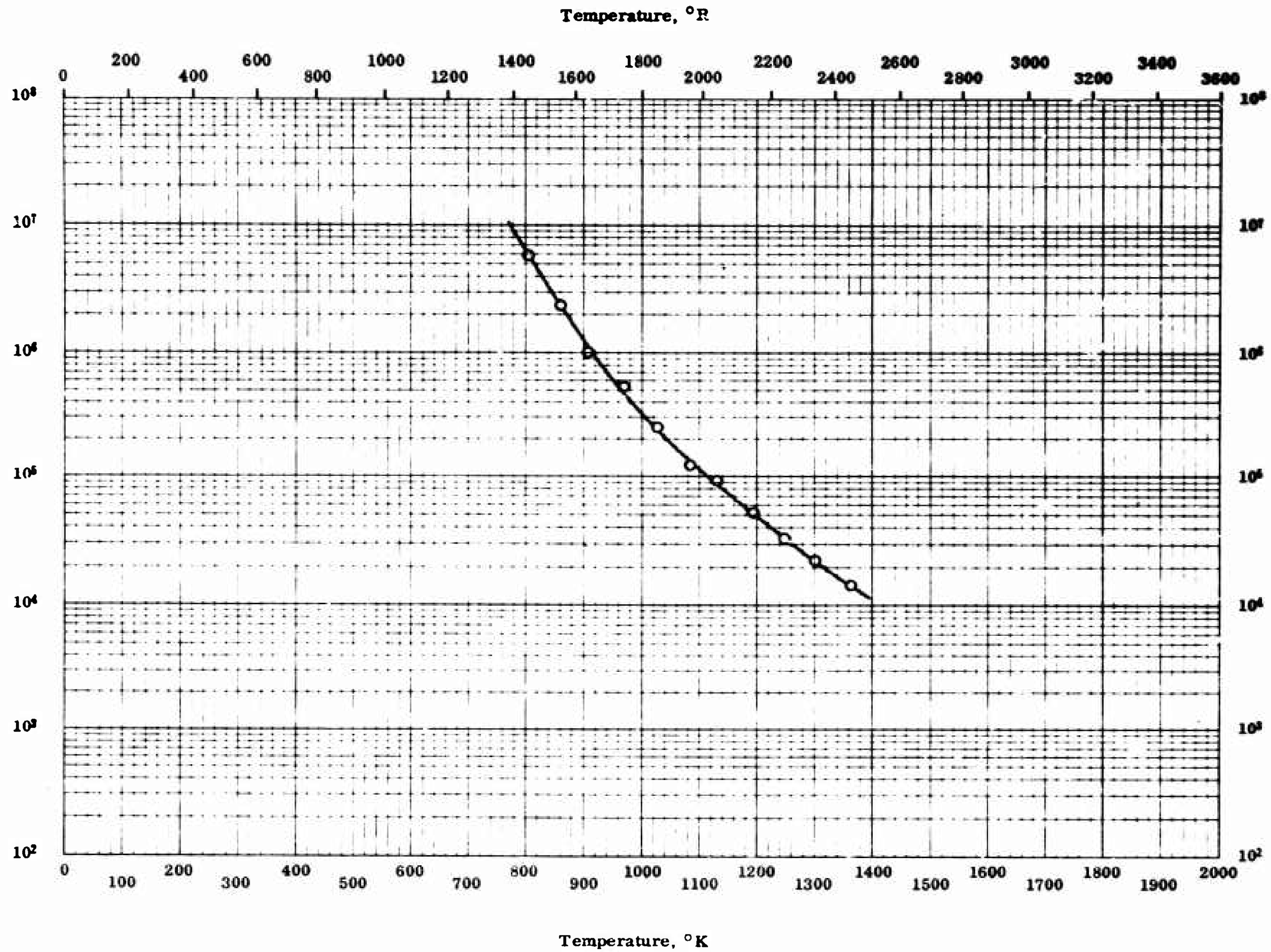
REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-41	293-873		$MgO \cdot SiO_2$, steatite.	
□	62-33	303-1223		$MgO \cdot SiO_2$, enstatite; polycrystalline; density 3.21 g cm^{-3}; dimensions approx. 10 by 1 by 1 cm.	$MgO \cdot SiO_2$ prepared from batch materials weighed to 0.1 mg, manually blended in acetone for 15 to 30 min, heated to 850 C for 24 to 48 hrs, remixed by hand for 20 to 30 min, reacted at 950 C for several hrs, machine ground, mixed in acetone for 45 to 60 min, mixed with 5% organic binder, and pressed at about 10,000 psi; enstatite polymorph prepared from $MgO \cdot SiO_2$ mixed with 0.02 mole LiF, fired to 1100 C for a few hrs to form dense protoenstatite bar; cooled slowly to 950 C and held for 24 hrs; at room temperature, specimen consisted only of enstatite; rate of temperature rise in apparatus 125 C hr^{-1}.
△	62-33	303-1221		$MgO \cdot SiO_2$, protoenstatite; polycrystalline; density 3.10 g cm^{-3}; dimensions approx. 10 by 1 by 1 cm.	$MgO \cdot SiO_2$ prepared as above; protoenstatite sample made by stabilizing protenstatite with 0.02 mole $MnSiO_3$ and firing at 1300 C for 24 hrs with 0.02 mole MgF_2 added as mineralizer; rate of temperature rise in apparatus 125 C hr^{-1}.

(Continued onto next page)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
◇	62-33	303-1173		$MgO \cdot SiO_2$, clinoenstatite; polycrystalline; density 3.19 g cm^{-3}.	$MgO \cdot SiO_2$ prepared as above; clinoenstatite sample prepared from $MgO \cdot SiO_2$ mixed with 0.02 mole LiF, fired at 1100 C for 24 hrs to form protoenstatite, transferred while hot to another furnace at 800 C and held at this temperature for 24 hrs; at room temperature, bar consisted only of clinoenstatite; rate of temperature rise in apparatus 125 C hr^{-1}.
▽	64-19	293-1273		$2MgO \cdot SiO_2$; 57.30 MgO and 42.70 SiO_2; prepared from basic magnesium carbonate and silicic acid. [Author's design : Sample A7]	Raw materials mixed together, dried, pressed into 1 cm by 1 cm by 10 cm bars at 500 psi, and heat treated; aggregate expansion measured with heating rate of 125 C hr^{-1}.

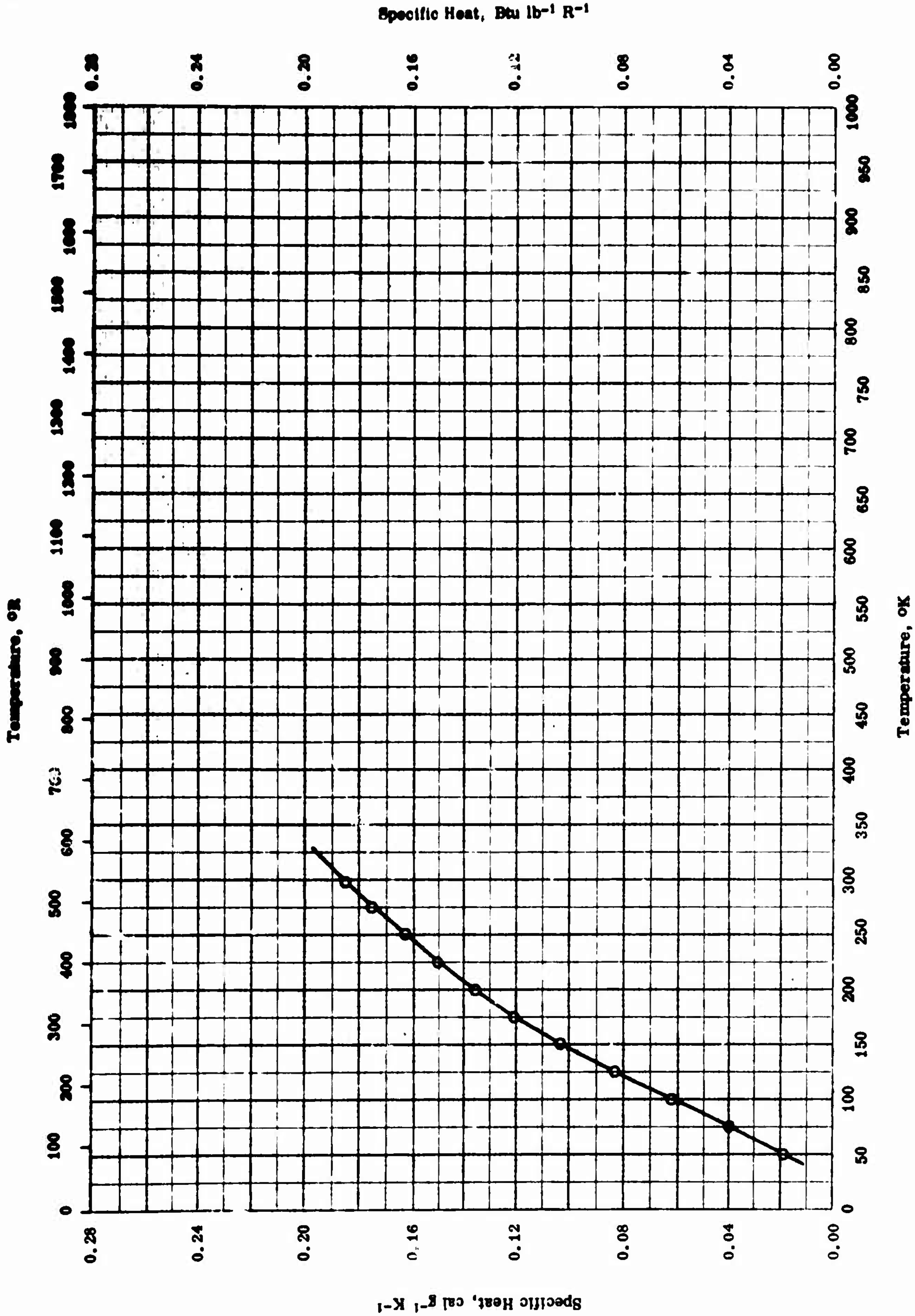


ELECTRICAL RESISTIVITY -- MAGNESIUM ALUMINUM SILICATE

ELECTRICAL RESISTIVITY -- MAGNESIUM ALUMINUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	57-14	811-1367		Cordierite; approx. 51 SiO_2, 35 Al_2O_3, and 14 MgO.	

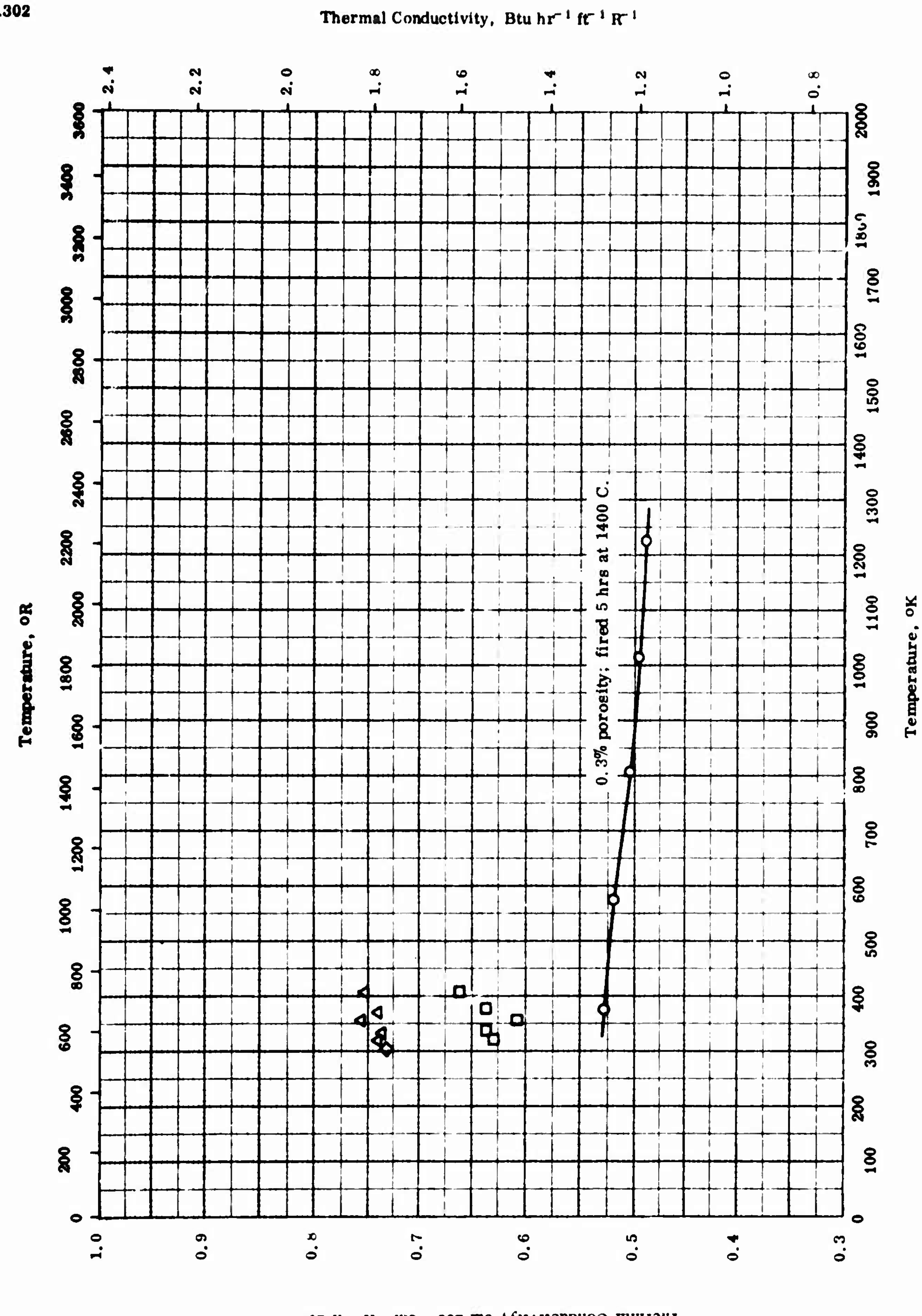


SPECIFIC HEAT -- MAGNESIUM ALUMINUM SILICATE

SPECIFIC HEAT -- MAGNESIUM ALUMINUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	63-33	50-298	0.3	Cordierite, 2 $MgO \cdot 2 Al_2O_3 \cdot 5 SiO_2$; 50.97 SiO_2, 35.45 Al_2O_3 and 13.74 MgO.	

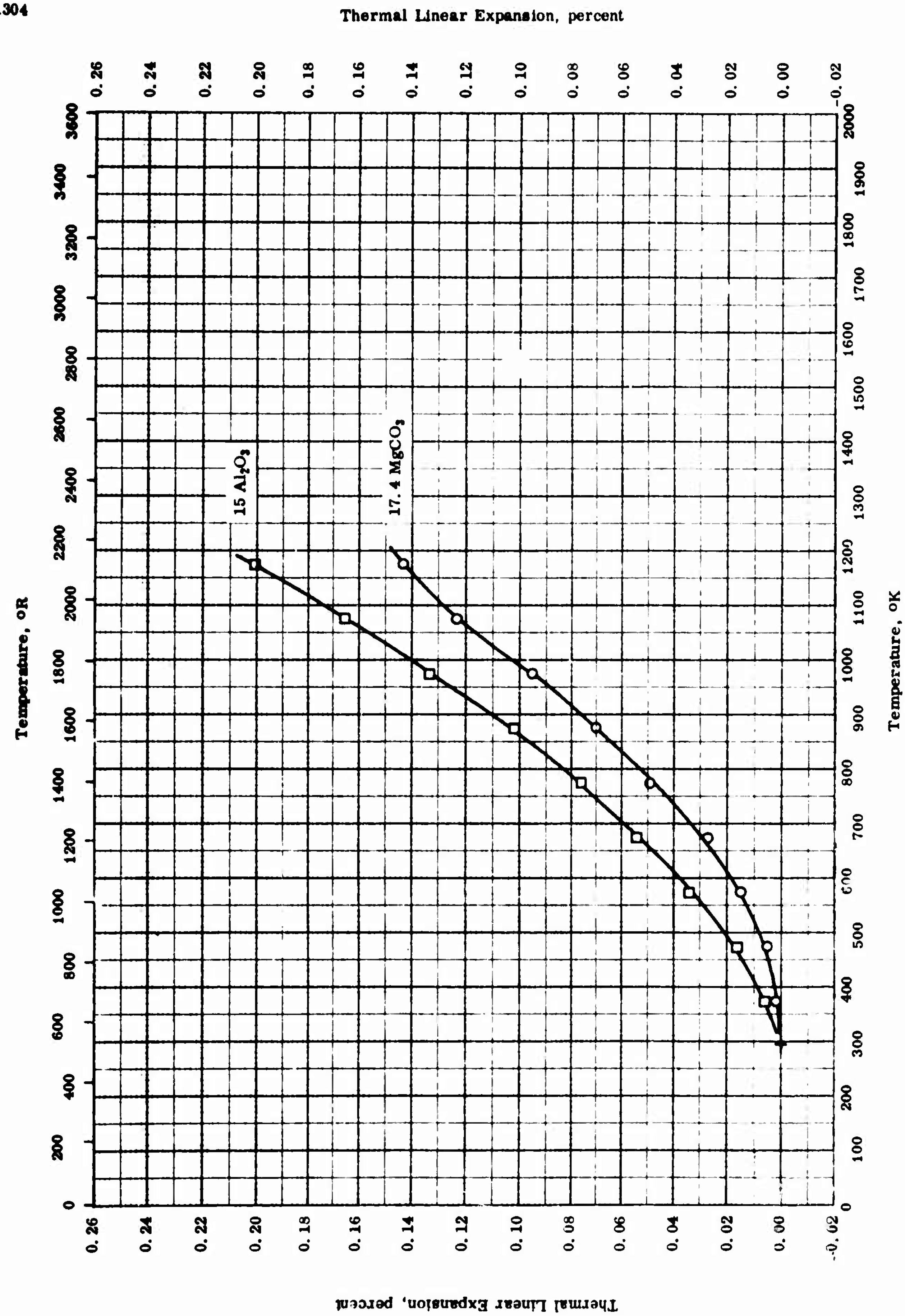


THERMAL CONDUCTIVITY -- MAGNESIUM ALUMINUM SILICATE (Cordierite)

THERMAL CONDUCTIVITY -- MAGNESIUM ALUMINUM SILICATE
(Cordierite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-5	373-1223		52.1 Florida Kaolin (EPK), 34.6 C and C ball clay, 7.3 MgO Westvaco FN722, and 6 Sierra talc; density 132 lb ft^{-3}; porosity 0.3%.	Fired 5 hrs at 1400 C.
□	54-8	320-408		35.95 calcine 23D, 29.57 ea. Edgar Plastic kaolin and N. Caroline kaolin, and 10 Old Mine No. 4 ball clay.	Tested in vacuum.
△	54-8	320-408		59.15 Edgar Plastic kaolin, 35.95 calcine 23D, and 10.00 Old Mine No. 4 ball clay.	Same as above.
◇	57-13	303		Cordierite 202.	

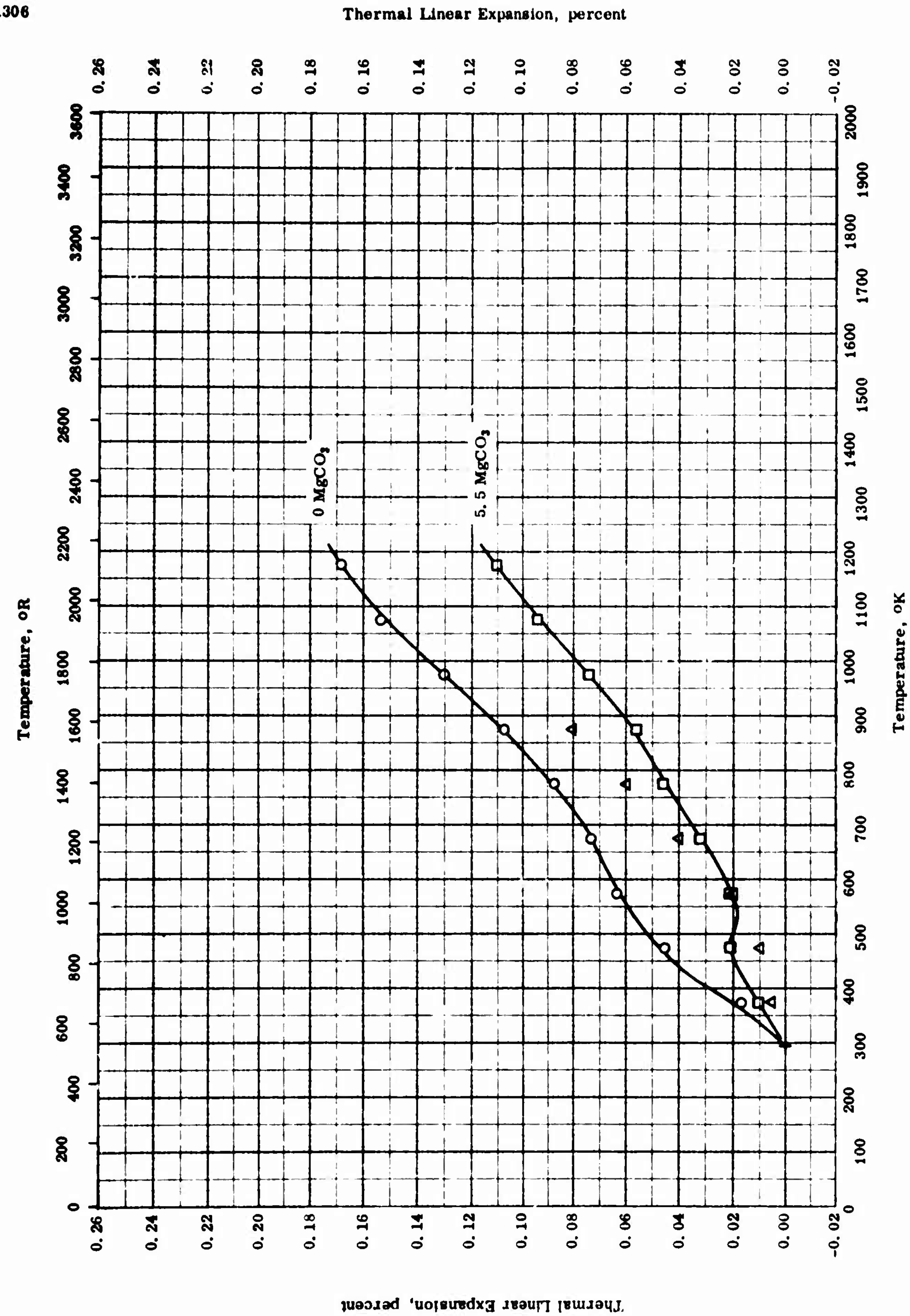


THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINUM SILICATE
(Low density cordierite)

THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINUM SILICATE
(Low density cordierite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-40	373-1173		67.9 E. P. K., 17.4 $MgCO_3$, and 14.7 Yellowstone talc; absorption 13.5%.	Fired at 1316 C.
□	54-40	373-1173		44 Yellowstone talc, 41 E. P. K., and 15 Al_2O_3; absorption 9.8%.	Fired at 1300 C.

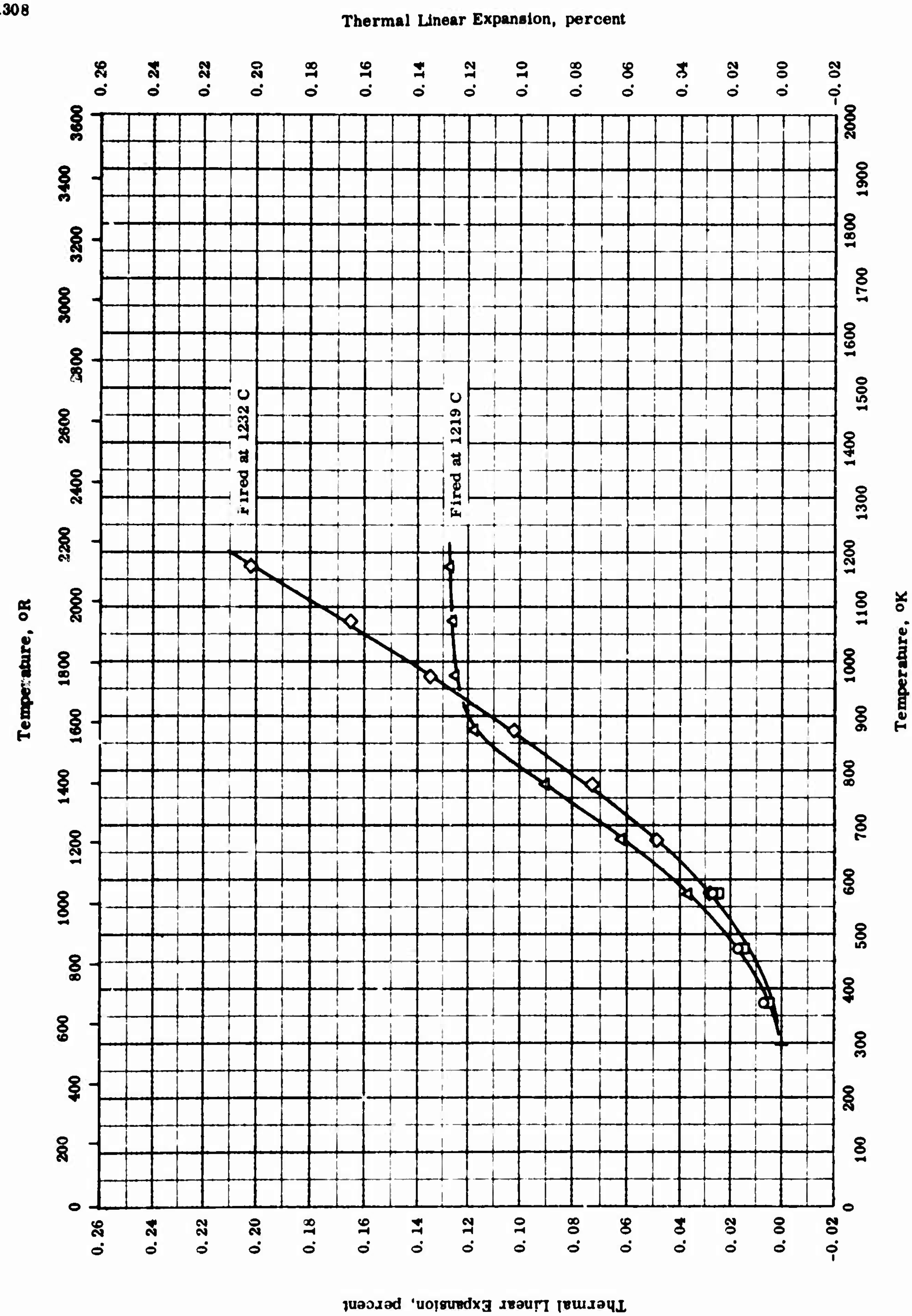


THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINUM SILICATE
(Medium density cordierite)

THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINUM SILICATE
(Medium density cordierite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-40	373-1173		75 E. P. K. and 25 Yellowstone talc; absorption 1.5%.	Fired at 1316 C.
□	54-40	373-1173		72.3 E. P. K., 21.9 Yellowstone talc, and 5.5 $MgCO_3$; absorption 2.2%.	Fired at 1343 C.
△	52-12	293-873		Not given.	Fired 16 hrs at 1350 C.

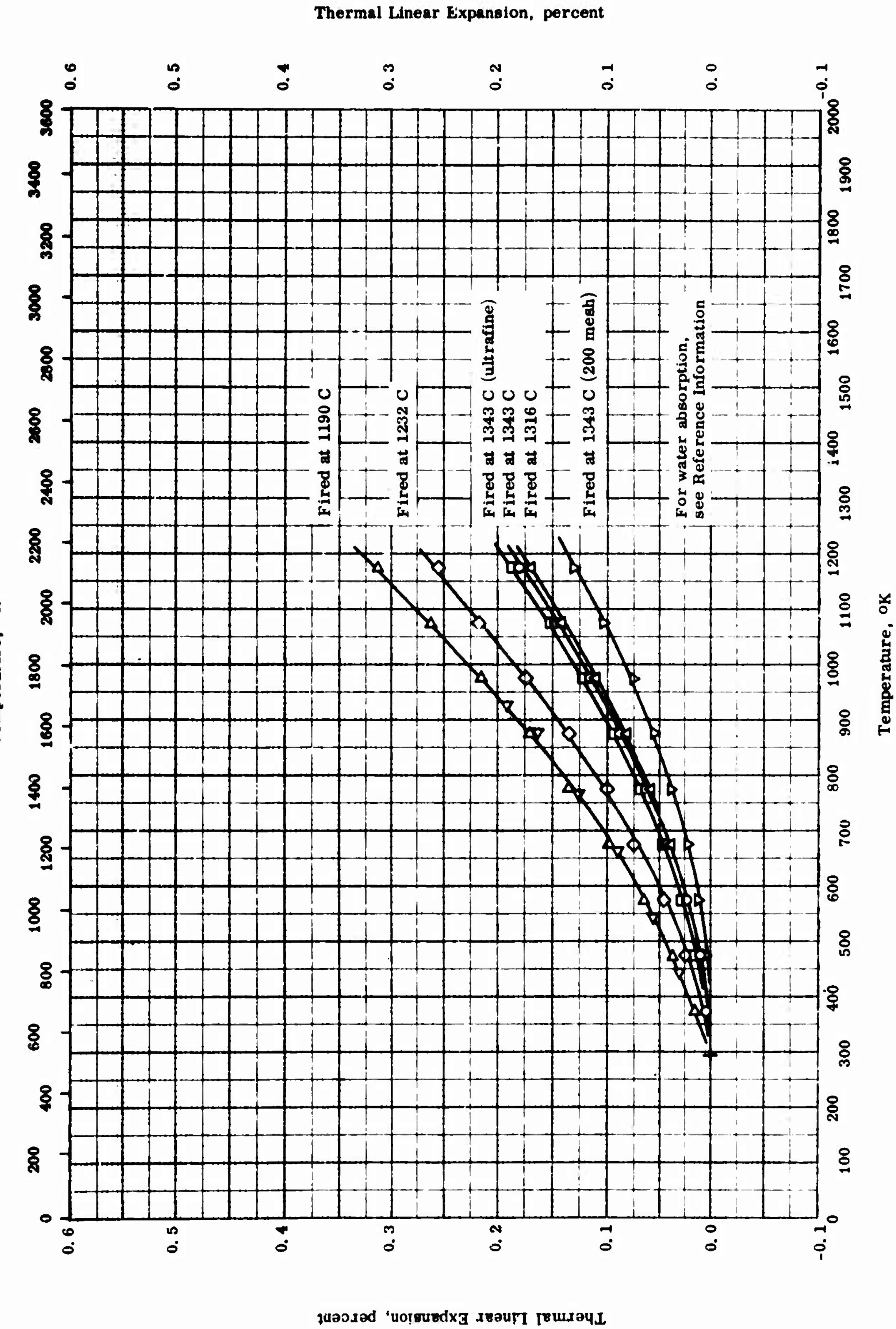


THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINUM SILICATE
(Dense cordierite)

THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINUM SILICATE
(Dense cordierite)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	49-10	293-573		69 ball clay, 17.55 $MgCO_3$, 7.1 talc, and 6.35 $Al(OH)_3$; apparent density 145 lb ft^{-3} and true density 162 lb ft^{-3}.	
□	49-10	293-573		48.1 kaolin, 32 ball clay, 14.2 $MgCO_3$, and 5.7 talc; apparent density 140 lb ft^{-3} and true density 153 lb ft^{-3}.	
△	54-40	373-1173		50 E. P. K., 40.8 Sierralite, and 9.2 Yellowstone talc; absorption 0.6%.	Fired at 1219 C.
◇	54-40	373-1173		Same as above; absorption 0.5%.	Fired at 1232 C.

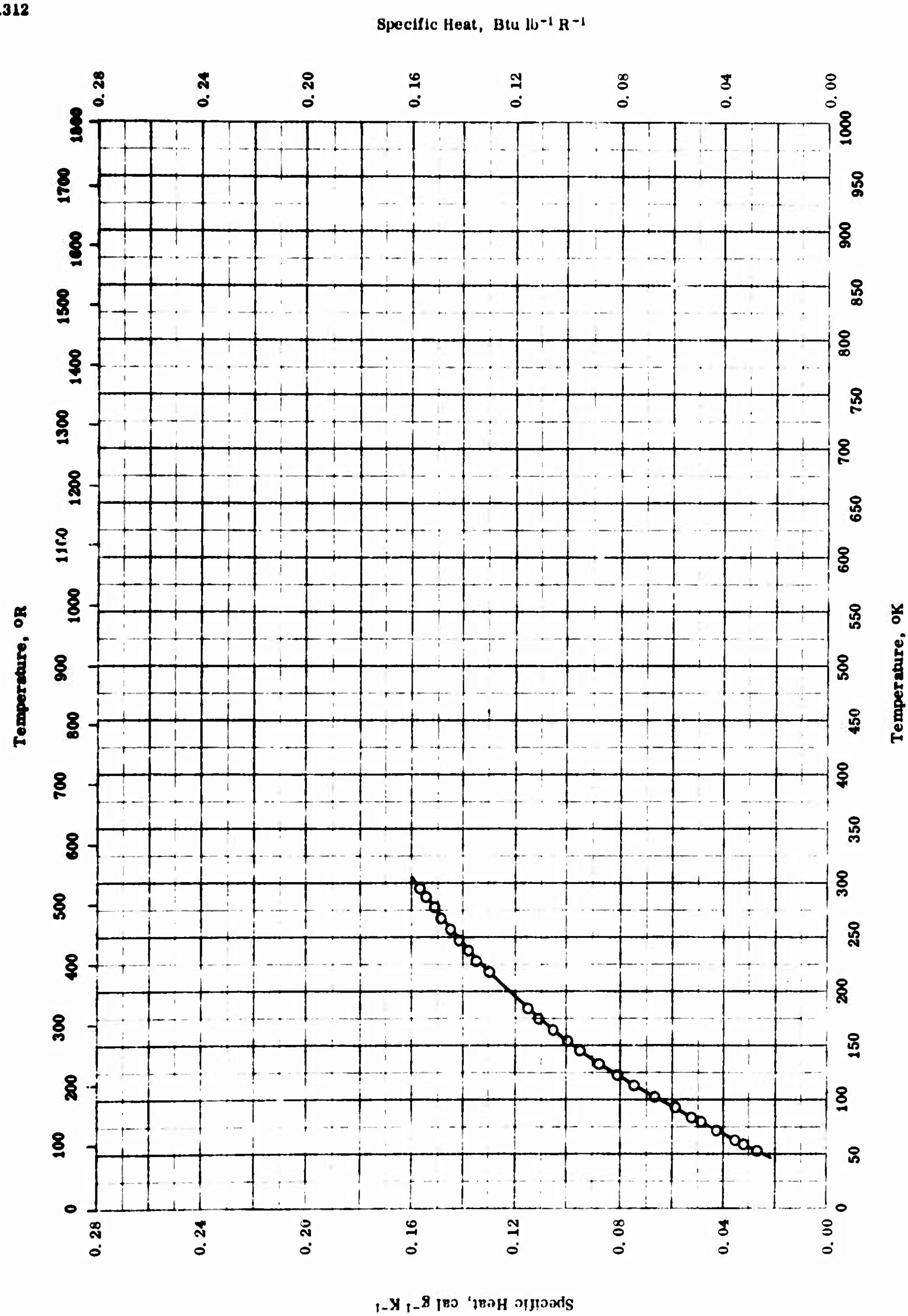


THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINUM SILICATE BODIES
(Cordierite bodies)

THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINUM SILICATE BODIES
(Cordierite bodies)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-40	373-1173		50 E. P. K. and 50 Sierralite.	Fired at 1343 C.
□	54-40	373-1173		Same as above (ultrafine); absorption 1.6%.	Fired at 1343 C.
△	54-40	373-1173		Same as above; absorption 0.9%.	Fired at 1316 C.
◇	54-40	373-1173		Same as above; absorption 0%.	Fired at 1232 C.
▽	54-40	373-1173		Same as above (200 mesh); absorption 7.5%.	Fired at 1343 C.
▷	54-40	373-1173		Same as above; absorption 0.4%.	Fired at 1190 C.
◁	52-12	293-923		Commercial cordierite body.	

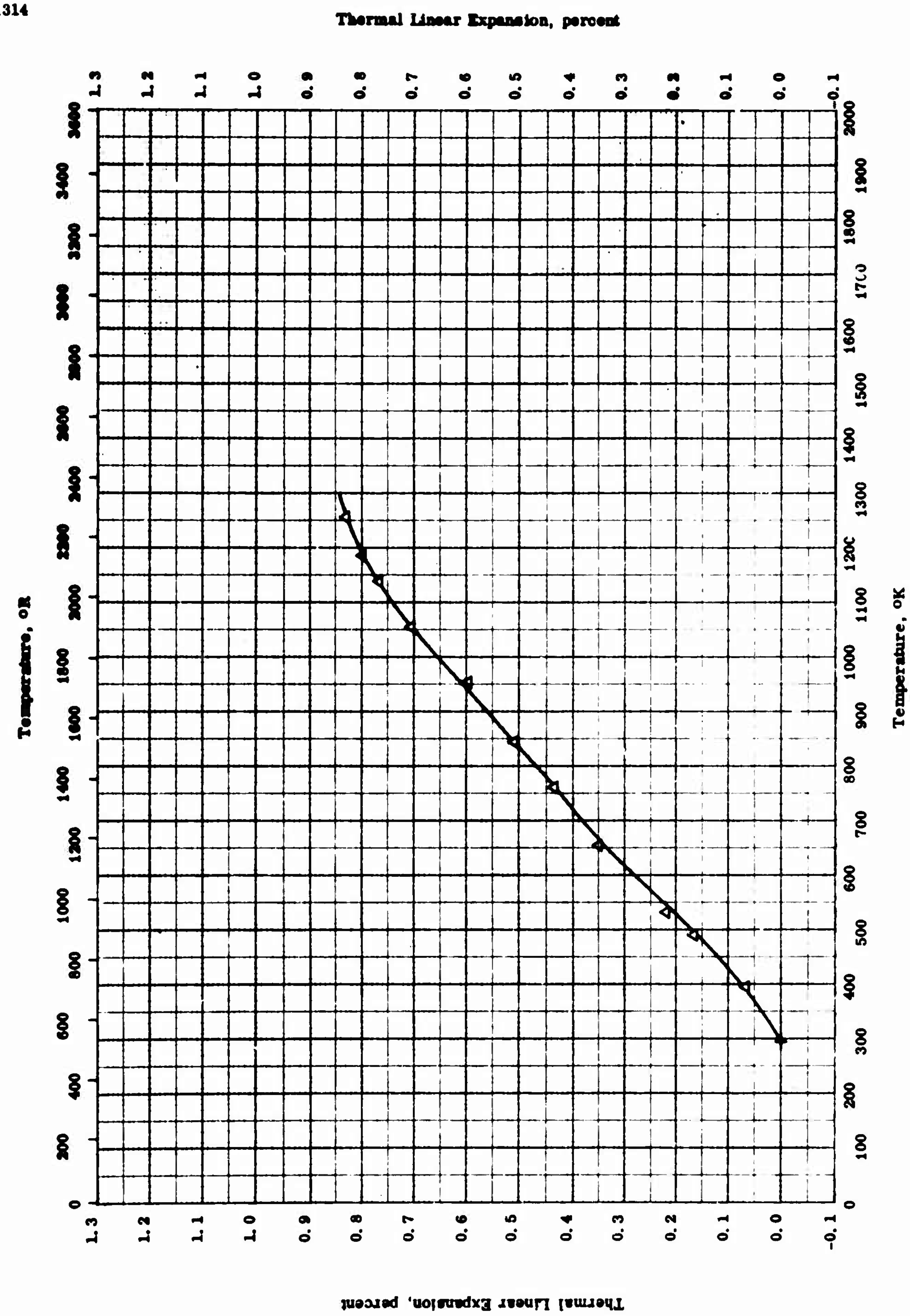


SPECIFIC HEAT -- MANGANESE METASILICATE

SPECIFIC HEAT -- MANGANESE METASILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	41-7	52-295		$MnSiO_3$; 54.18 MnO; density 230 lb ft^{-3}.	

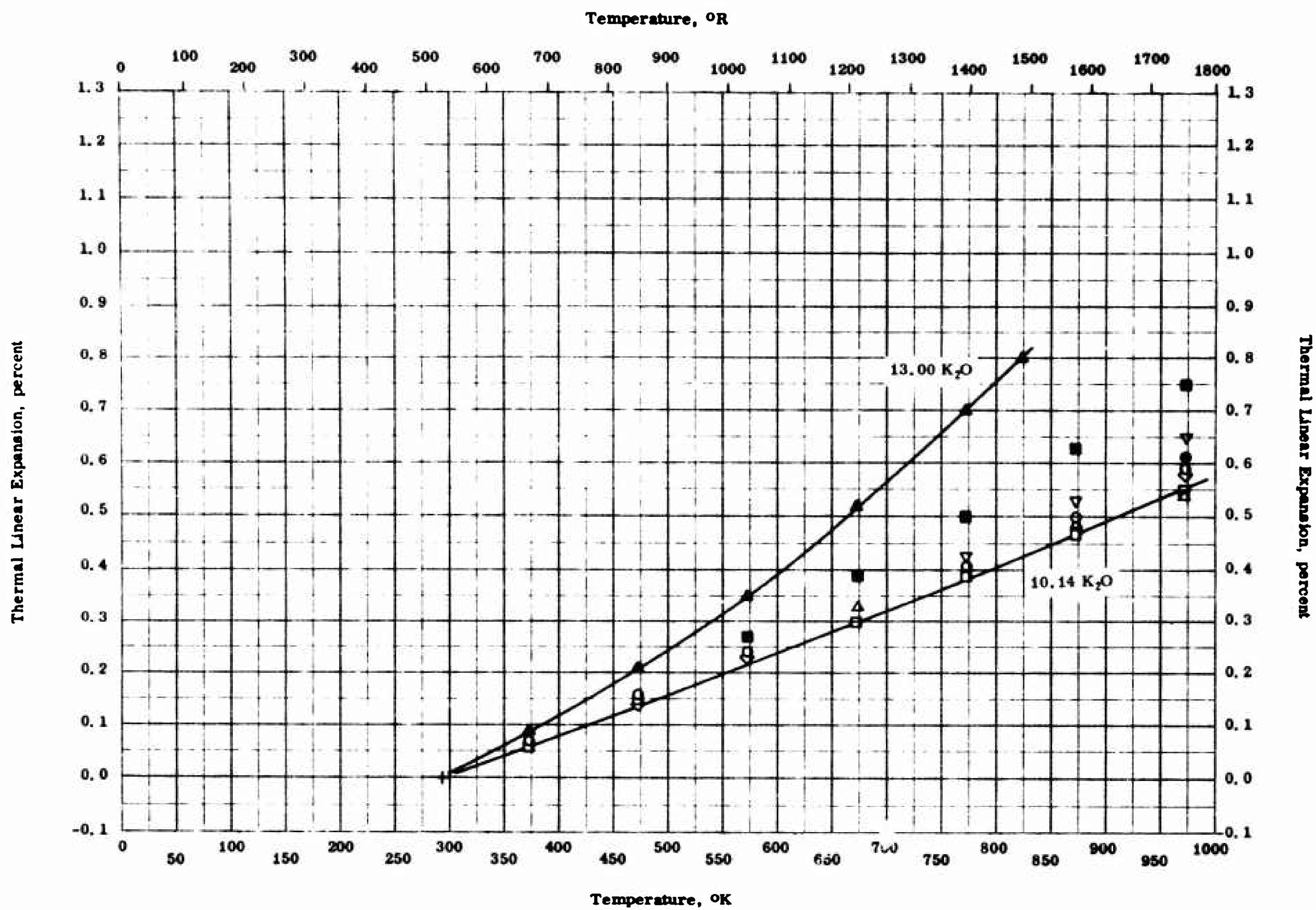


THERMAL LINEAR EXPANSION -- MANGANESE METASILICATE

THERMAL LINEAR EXPANSION -- MANGANESE METASILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
△	59-18	293-1251		$MnO \cdot SiO_2$; dimensions 4 in. long by 7/16 in. square.	Manganese dioxide and flint heated together at 1100 C for 4 hrs in electric muffle furnace, mixed with 15% binder solution (40 g Carbowax 20 M, 20 cc Methocel solution and 40 cc H_2O), pressed at 5000 psi, and fired at 1200 C for 2 hrs; measured with heating rate of 2 C min^{-1}.

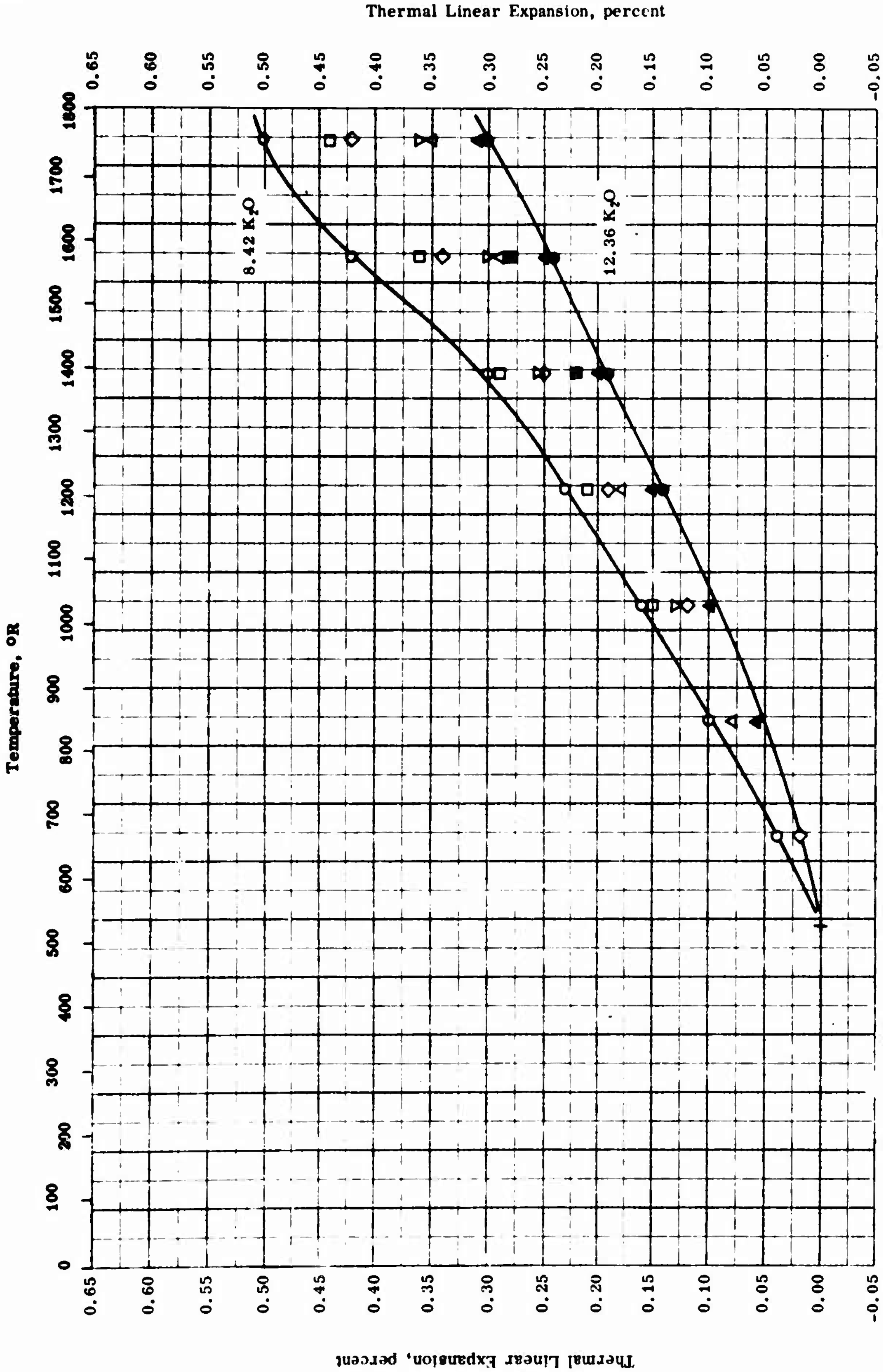


THERMAL LINEAR EXPANSION -- POTASSIUM ALUMINUM SILICATES
(Isotropic, glassy)

THERMAL LINEAR EXPANSION -- POTASSIUM ALUMINUM SILICATES
(Isotropic, glassy)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	41-8	293-973		Potassium feldspar, isotropic (glassy); 72.84 SiO_2, 15.4 Al_2O_3, 8.42 K_2O, 2.93 Na_2O, 0.27 CaO, 0.11 MgO, 0.11 Fe_2O_3, and 0.01 TiO_2.	Annealed 1 hr at 10 C below softening point and cooled in 15 hrs.
□	41-8	293-973		Same as above; 68.30 SiO_2, 17.90 Al_2O_3, 10.14 K_2O, 2.87 Na_2O, 0.31 CaO, and 0.07 Fe_2O_3.	Same as above.
△	41-8	293-973		Same as above; 66.04 SiO_2, 18.76 Al_2O_3, 10.73 K_2O, 3.56 Na_2O, 0.14 MgO, 0.09 TiO_2, 0.08 Fe_2O_3, and 0.02 CaO.	Same as above.
◇	41-8	293-973		Same as above; 67.68 SiO_2, 18.87 Al_2O_3, 10.74 K_2O, 2.78 Na_2O, 0.49 CaO, and 0.05 Fe_2O_3.	Same as above.
▽	41-8	293-973		Same as above; 64.70 SiO_2, 19.50 Al_2O_3, 11.21 K_2O, 4.19 Na_2O, 0.12 MgO, 0.11 CaO, 0.07 Fe_2O_3, and trace of TiO_2.	Same as above.
●	41-8	293-973		Same as above; 67.84 SiO_2, 17.27 Al_2O_3, 11.40 K_2O, 2.15 Na_2O, 0.42 MgO, 0.08 CaO, and 0.07 Fe_2O_3.	Same as above.
■	41-8	293-973		Same as above; 65.33 SiO_2, 19.27 Al_2O_3, 12.36 K_2O, 2.67 Na_2O, 0.27 CaO, 0.08 Fe_2O_3, and traces of TiO_2 and MgO.	Same as above.
▲	41-8	293-823		Same as above; 65.90 SiO_2, 18.70 Al_2O_3, 13.00 K_2O, 1.70 Na_2O, 0.20 CaO, 0.08 Fe_2O_3, and trace of MgO.	Same as above.

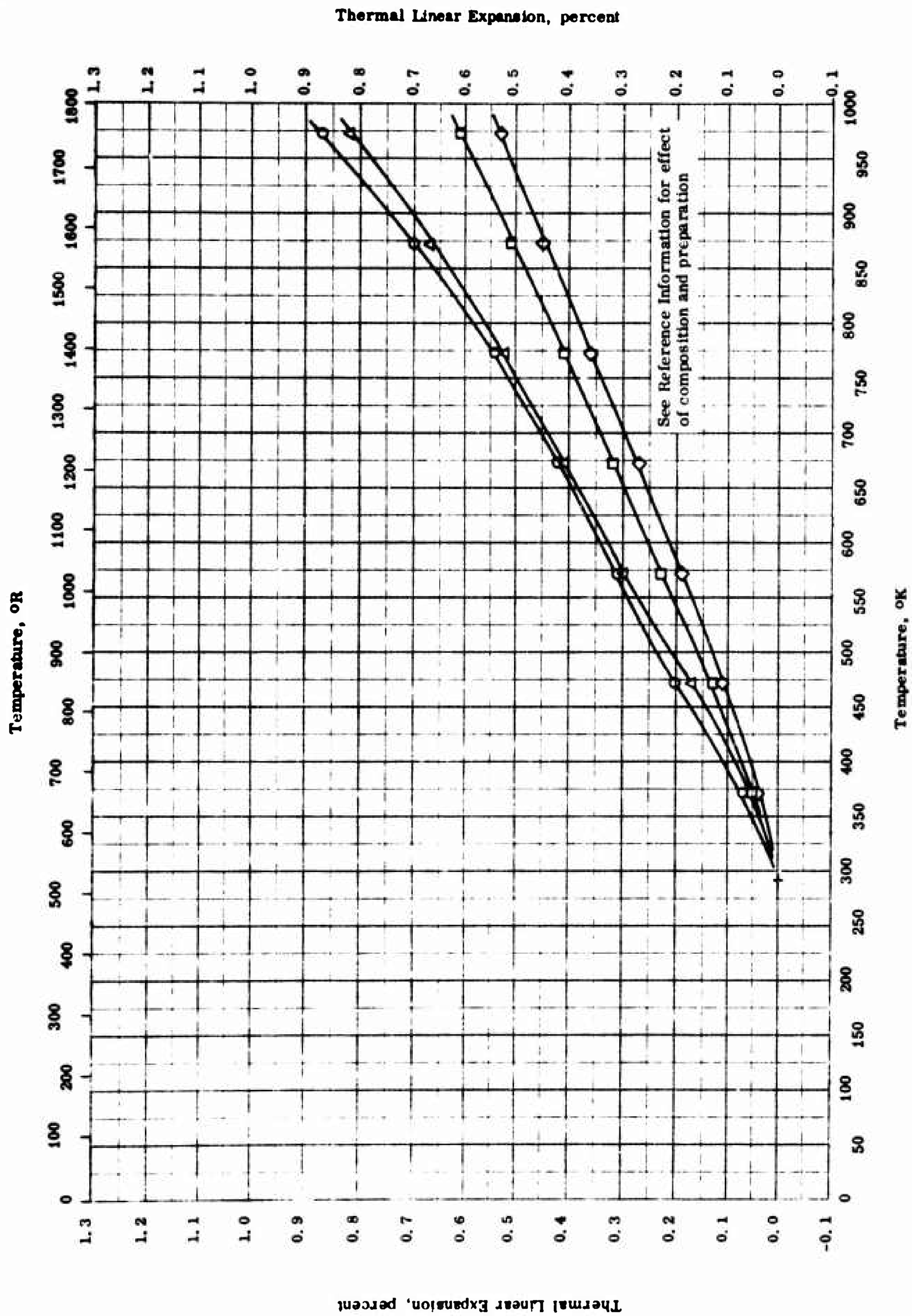


THERMAL LINEAR EXPANSION -- POTASSIUM ALUMINUM SILICATES
(Anisotropic, crystalline)

THERMAL LINEAR EXPANSION -- POTASSIUM ALUMINUM SILICATES
(Anisotropic, crystalline)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	41-8	293-973		Potassium feldspar, anisotropic (crystalline); 72.84 SiO_2, 15.4 Al_2O_3, 8.42 K_2O, 2.93 Na_2O, 0.27 CaO, 0.11 MgO, 0.11 Fe_2O_3, and 0.01 TiO_2.	Extruded rods plasticized with small amounts of gum, air dried, oven dried at 230 F, and fired at cone 06.
□	41-8	293-973		Same as above; 68.3 SiO_2, 17.90 Al_2O_3, 10.14 K_2O, 2.87 Na_2O, 0.31 CaO, and 0.07 Fe_2O_3.	Same as above.
△	41-8	293-973		Same as above; 66.04 SiO_2, 18.76 Al_2O_3, 10.73 K_2O, 3.56 Na_2O, 0.14 MgO, 0.09 TiO_2, 0.08 Fe_2O_3, and 0.02 CaO.	Same as above.
◇	41-8	293-973		Same as above; 67.68 SiO_2, 18.87 Al_2O_3, 10.74 K_2O, 2.78 Na_2O, 10.74 K_2O, 2.78 Na_2O, 0.49 CaO, and 0.05 Fe_2O_3.	Same as above.
▽	41-8	293-973		Same as above; 64.70 SiO_2, 19.50 Al_2O_3, 11.21 K_2O, 4.19 Na_2O, 0.12 MgO, 0.11 CaO, 0.07 Fe_2O_3, and trace of TiO_2.	Same as above.
▲	41-8	293-973		Same as above; 67.8 SiO_2, 17.27 Al_2O_3, 11.40 K_2O, 2.15 Na_2O, 0.42 MgO, 0.08 CaO, and 0.07 Fe_2O_3.	Same as above.
●	41-8	293-973		Same as above; 65.33 SiO_2, 19.27 Al_2O_3, 12.36 K_2O, 2.67 Na_2O, 0.27 CaO, 0.08 Fe_2O_3, and traces of TiO_2 and MgO.	Same as above.
■	41-8	293-973		Same as above; 65.90 SiO_2, 18.70 Al_2O_3, 13.00 K_2O, 1.70 Na_2O, 0.20 CaO, 0.08 Fe_2O_3, and trace of MgO.	Same as above.

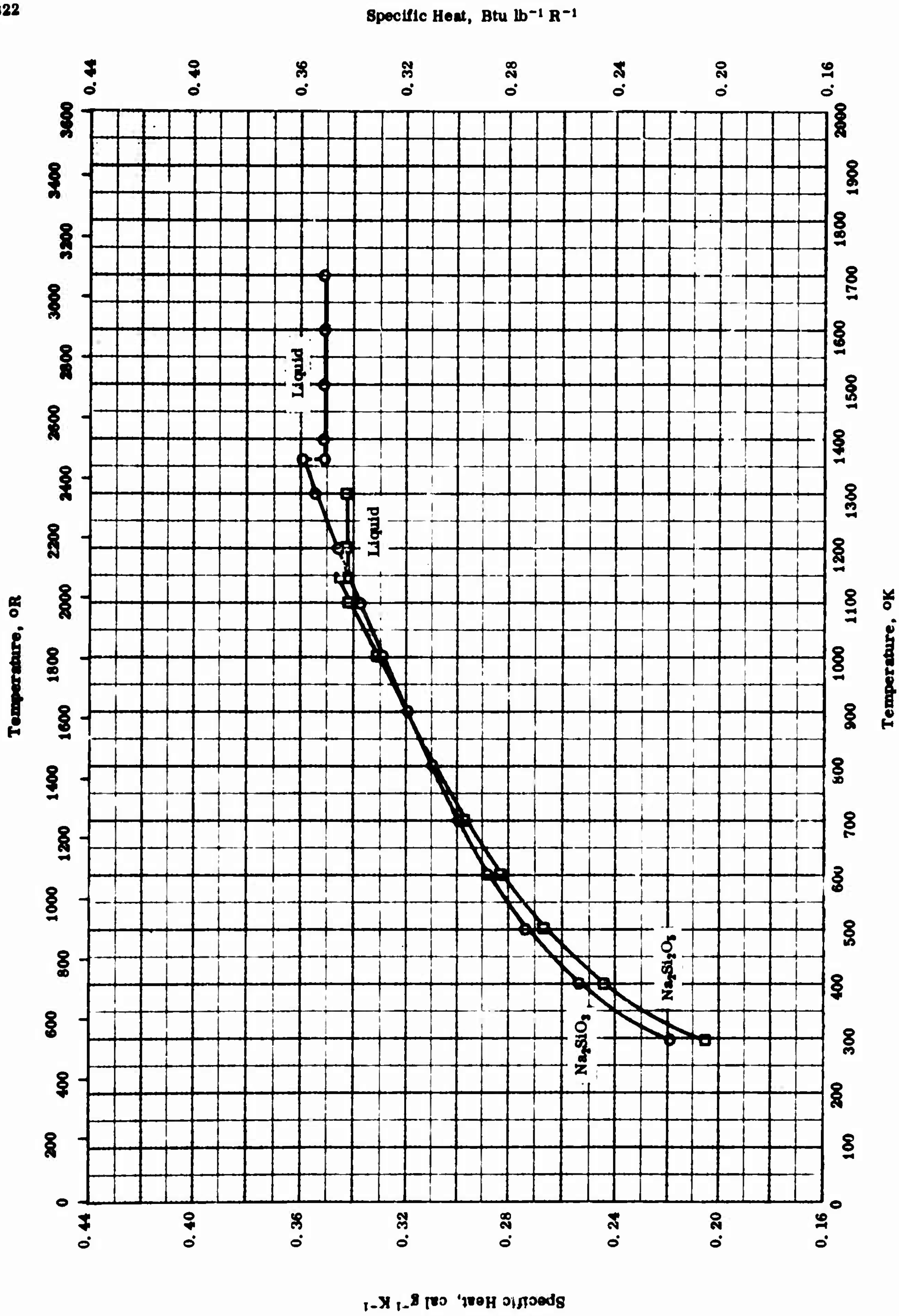


THERMAL LINEAR EXPANSION -- POTASSIUM SODIUM ALUMINUM SILICATES

THERMAL LINEAR EXPANSION -- POTASSIUM SODIUM ALUMINUM SILICATES

REFERENCE INFORMATION

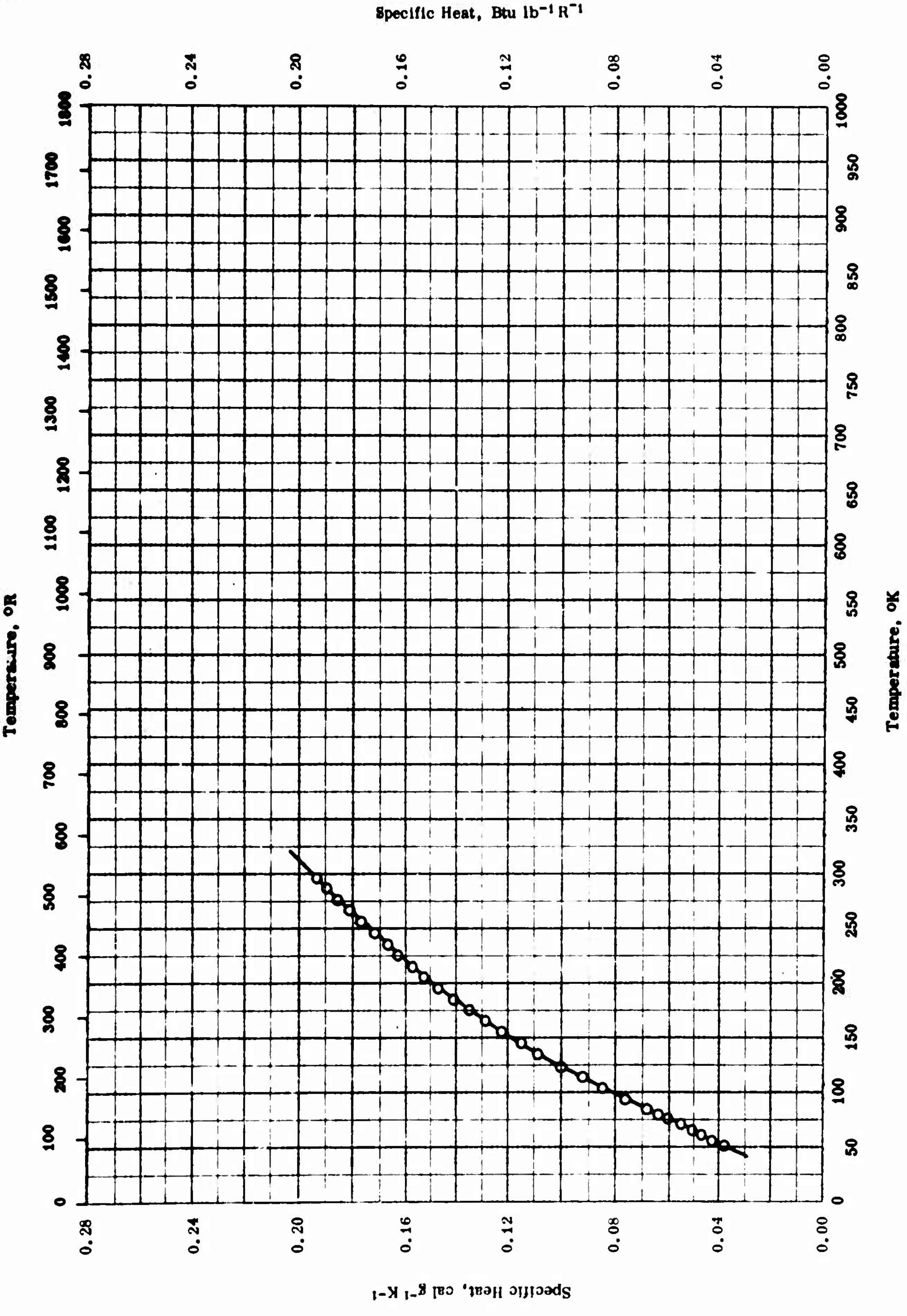
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	41-8	293-973		Nepheline syenite; 48.92 SiO_2, 31.69 Al_2O_3, 13.70 Na_2O, 4.06 K_2O, 0.86 CaO, 0.19 Fe_2O_3, 0.06 MgO, and 0.01 TiO_2; ign. loss 0.43; isotropic (glassy).	Melted, annealed 1 hr at 10 C below softening point, and cooled in 15 hrs.
△	41-8	293-973		Same as above; anisotropic (crystalline).	Extruded, air dried, oven dried at 230 F, and fired to cone 06.
□	41-8	293-973		Nepheline syenite; 60.24 SiO_2, 24.05 Al_2O_3, 10.03 Na_2O, 5.01 K_2O, 0.15 CaO, 0.06 Fe_2O_3, 0.02 MgO, and 0.002 TiO_2; isotropic (glassy).	Melted, annealed 1 hr at 10 C below softening point, and cooled in 15 hrs.
◇	41-8	293-973		Same as above; anisotropic (crystalline).	Extruded, air dried, oven dried at 230 F, and fired to cone 06.



SPECIFIC HEAT -- SODIUM SILICATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	45-3	400-1800		Sodium metasilicate, Na_2SiO_3 ($Na_2O \cdot SiO_2$); 99. 5 Na_2SiO_3.	
□	45-3	298-1300		Sodium disilicate, $Na_2Si_2O_5$ ($Na_2O \cdot 2SiO_2$); 99. 0 $Na_2Si_2O_5$.	

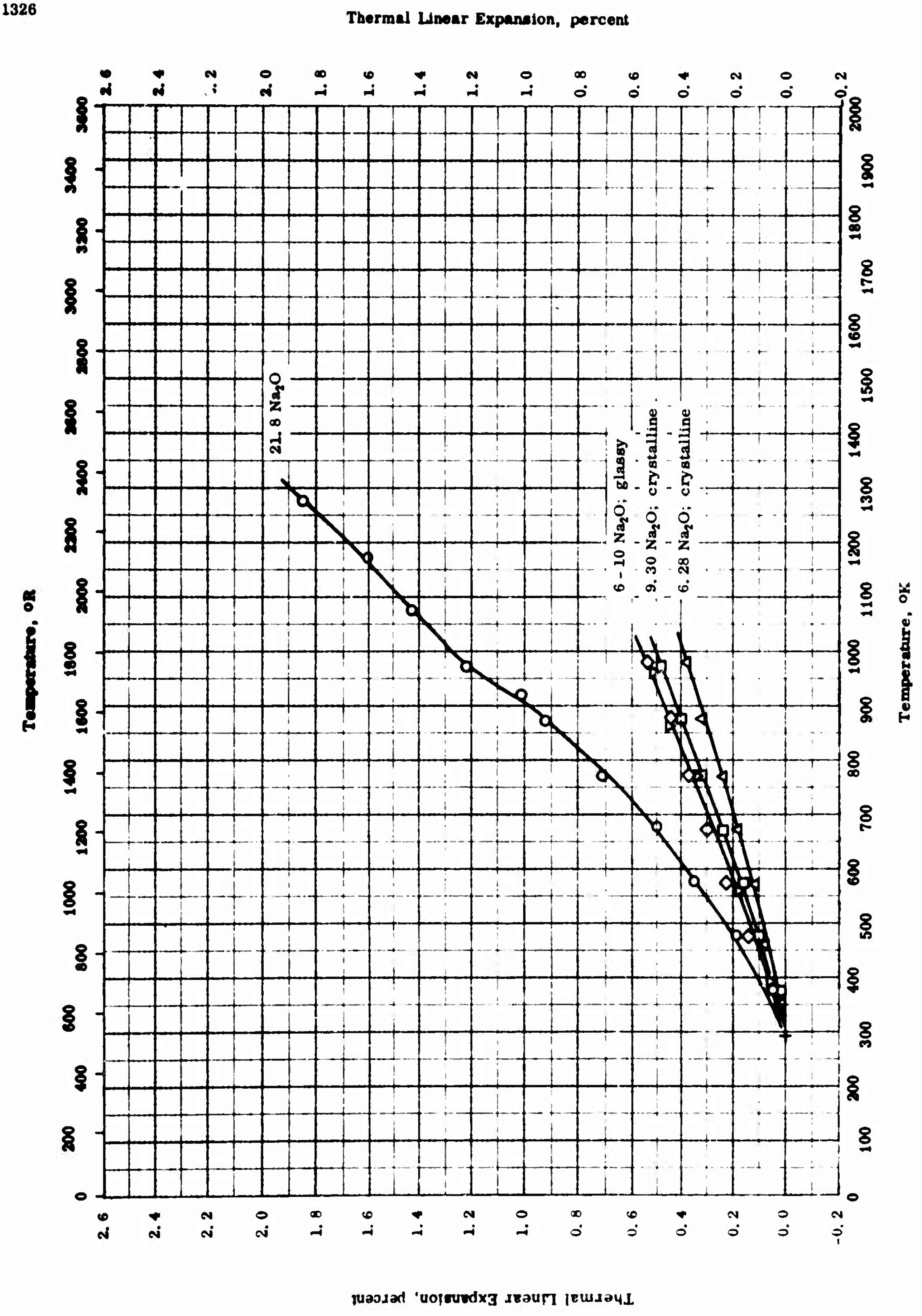


SPECIFIC HEAT -- SODIUM ALUMINUM METASILICATE

SPECIFIC HEAT -- SODIUM ALUMINUM METASILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	61-33	50-298		Dehydrated analcite, $Na_2O \cdot Al_2O_3 \cdot 4 SiO_2$; 56.05 SiO_2, 22.36 Al_2O_3, 13.44 Na_2O, 8.13 combined water, 0.10 K_2O, 0.03 Fe_2O_3, 0.02 MgO, 0.01 TiO_2, 0.01 adsorbed H_2O, and 0.005> CaO.	Prepared from analcite by heating 20 hrs at 500 C.

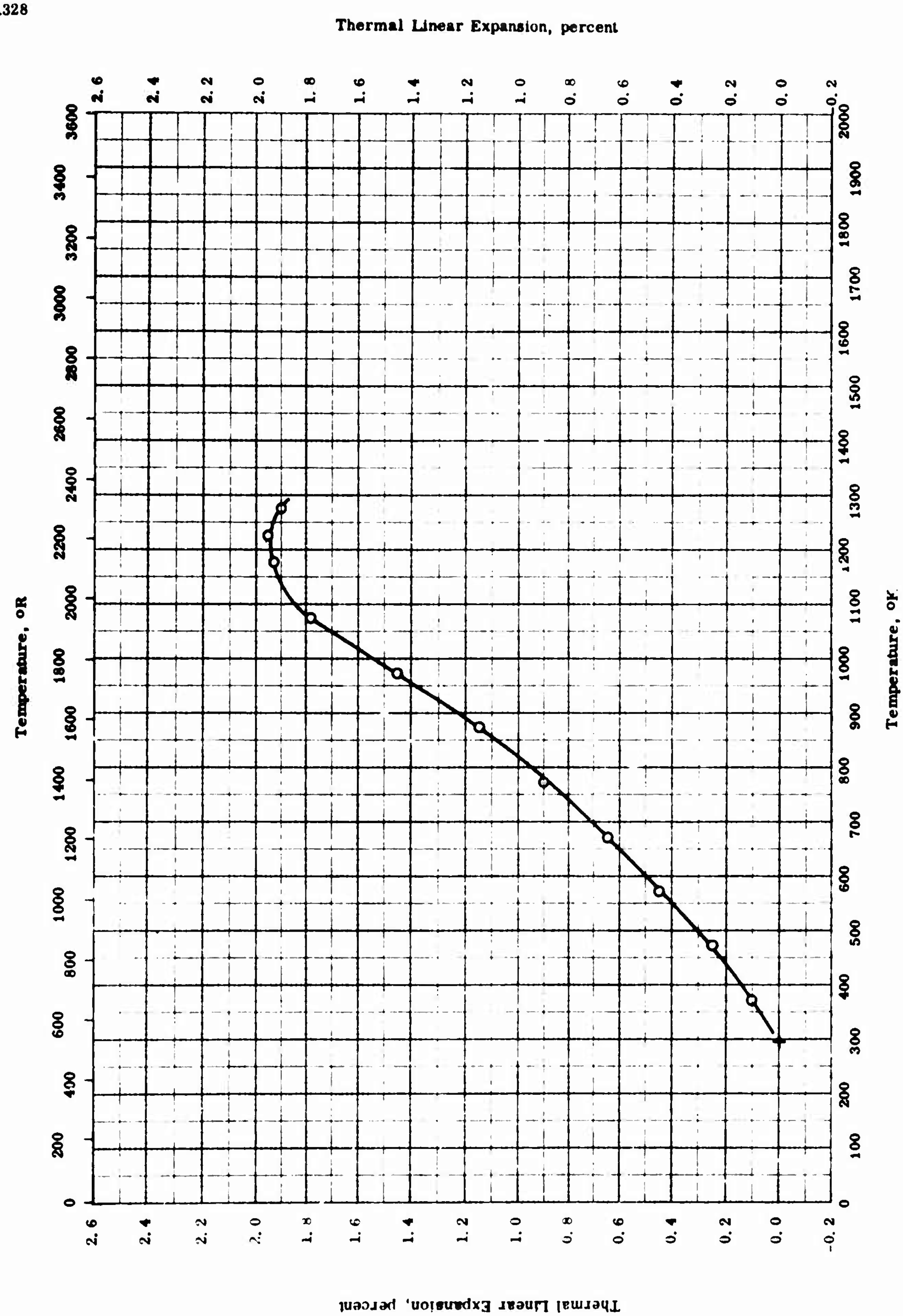


THERMAL LINEAR EXPANSION -- SODIUM ALUMINUM SILICATES

THERMAL LINEAR EXPANSION -- SODIUM ALUMINUM SILICATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	49-8	293-1273		Sodium feldspar; 42.3 SiO_2, 35.9 Al_2O_3, 21.8 Na_2O; prepared from pottery flint, c.p. Al_2O_3, and c.p. Na_2CO_3.	Wet milled in acetone, held 50 hrs at 1100 C, 4 hrs at 1400 C, pressed and sintered 1 hr at 1400 C.
□	41-8	293-973		Sodium feldspar; 68.40 SiO_2, 19.40 Al_2O_3, 9.30 Na_2O, 1.40 K_2O, 1.00 CaO, 0.07 Fe_2O_3, and trace of MgO; crystalline.	Extruded rods plasticized with small amount of gum, air dried, oven dried at 230 F, and fired at cone 06.
△	41-8	293-973		Sodium feldspar; 60.64 SiO_2, 23.69 Al_2O_3, 6.28 Na_2O, 3.27 K_2O, 5.14 CaO, 0.25 Fe_2O_3, and trace of MgO; crystalline.	Same as above.
◇	41-8	293-973		Sodium feldspar; 68.40 SiO_2, 19.40 Al_2O_3, 9.30 Na_2O, 1.40 K_2O, 1.00 CaO, 0.07 Fe_2O_3, and trace of MgO; glassy.	Annealed 1 hr at 10 C below softening point and cooled in 15 hrs.
▽	41-8	293-963		Sodium feldspar; 60.64 SiO_2, 23.69 Al_2O_3, 6.28 Na_2O, 3.27 K_2O, 5.14 CaO, 0.25 Fe_2O_3, and trace of MgO; glassy.	Same as above.

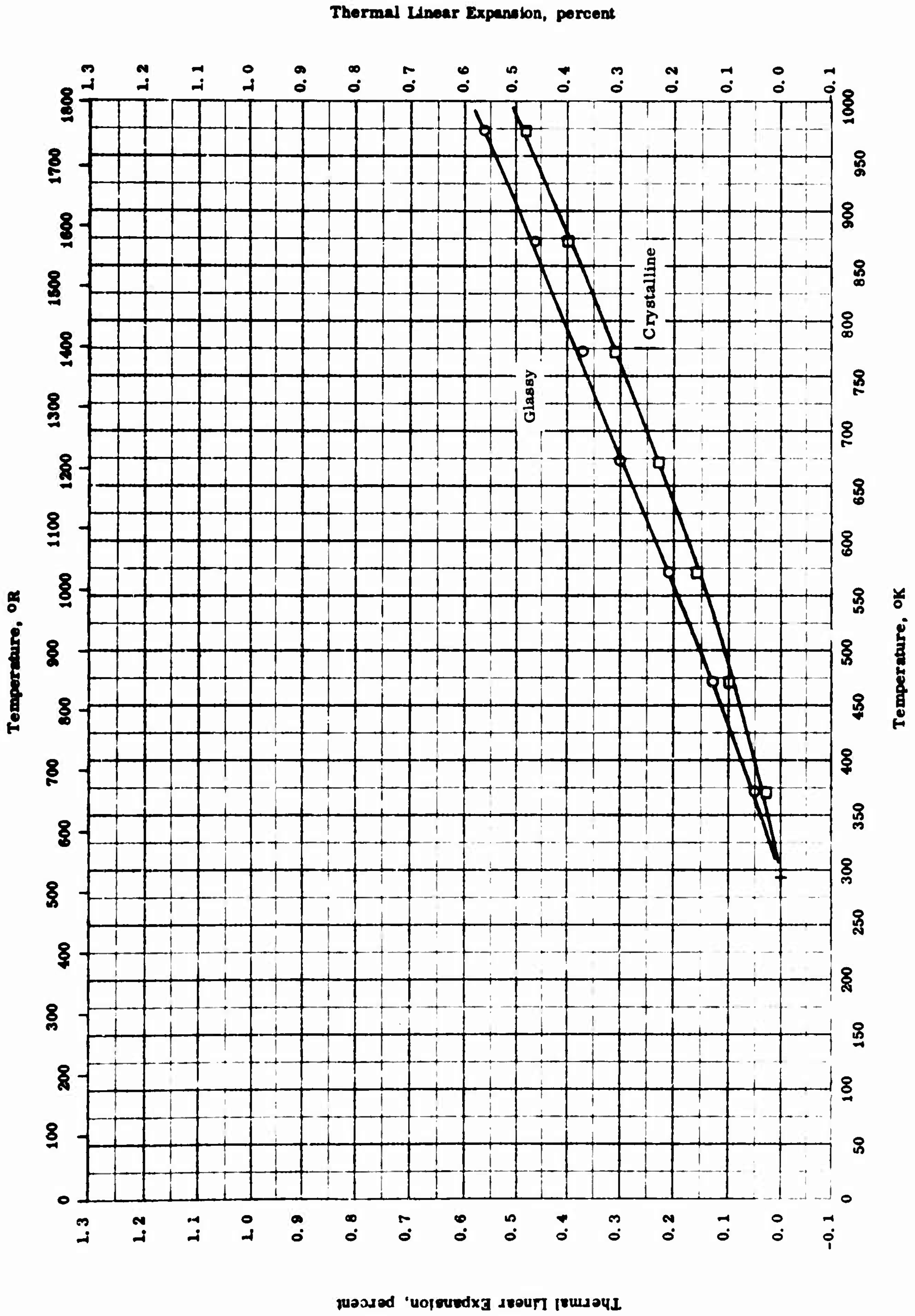


THERMAL LINEAR EXPANSION -- SODIUM CALCIUM SILICATE

THERMAL LINEAR EXPANSION -- SODIUM CALCIUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	49-8	293-1273		Na_2CaSiO_4; 34.8 Na_2O, 33.7 SiO_2, and 31.5 CaO; prepared from c.p. Na_2CO_3, c.p. $CaCO_3$, and pottery flint.	Wet milled in acetone for 12 hrs, heated 50 hrs at 1100 C, pressed from 80 mesh, and sintered 1 hr at 1100 C.



THERMAL LINEAR EXPANSION -- SODIUM POTASSIUM ALUMINUM SILICATES

THERMAL LINEAR EXPANSION -- SODIUM POTASSIUM ALUMINUM SILICATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	41-8	293-973		Sodium-potassium feldspar; isotropic (glassy); 69.12 SiO_2, 18.04 Al_2O_3, 6.70 K_2O, 5.18 Na_2O, and 0.98 CaO.	Melted, annealed 1 hr at 10 C below softening point, and cooled in 15 hrs.
□	41-8	293-973		Same as above; anisotropic (crystalline).	Extruded, air dried, oven dried at 230 F, and fired at cone 06.

PROPERTIES OF STRONTIUM SILICATES

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density.	3.54	221
Melting Point	2023*	3641*

*Handbook of Chemistry and Physics. (Ref. 64-16)

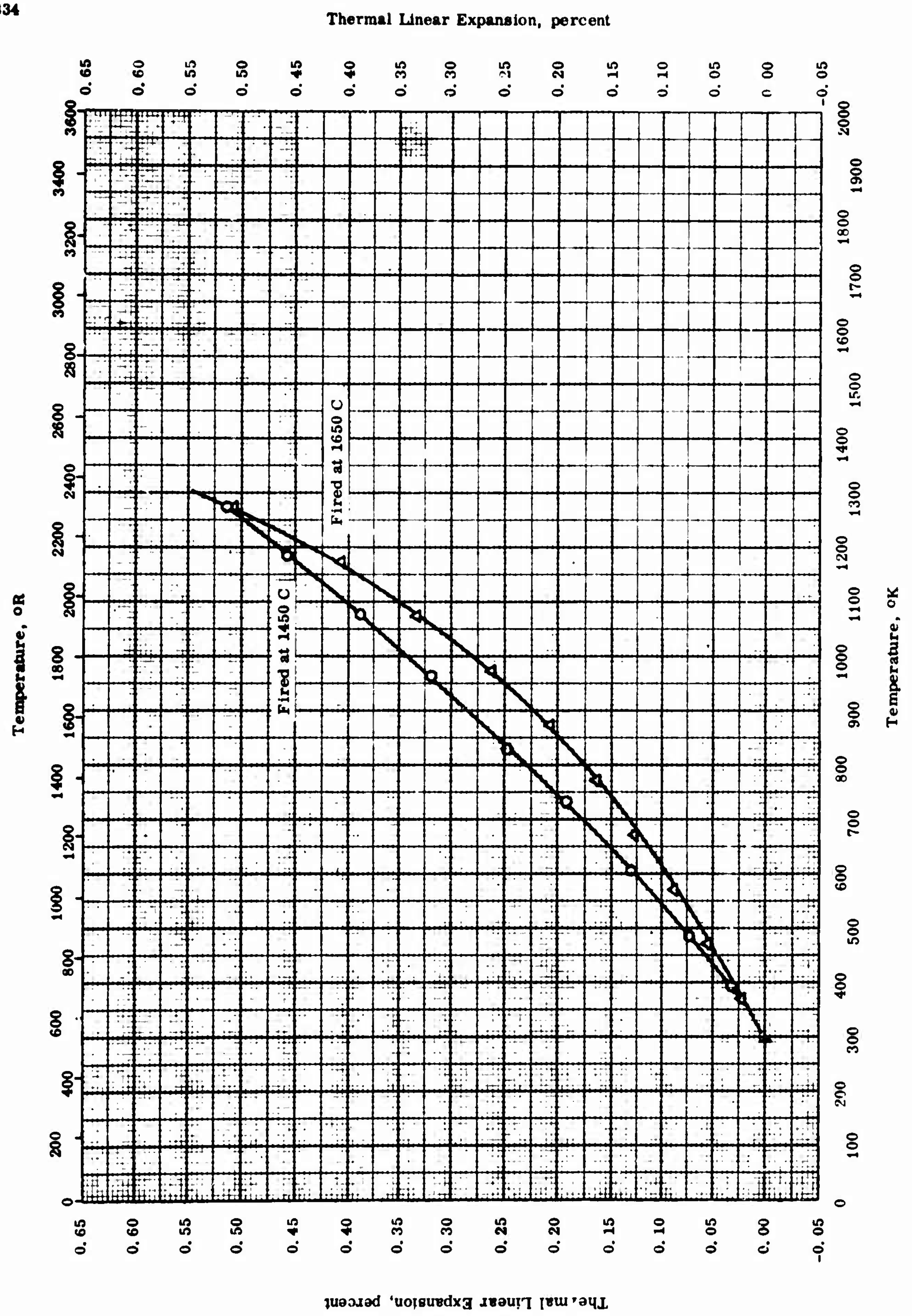
REPORTED VALUES

Density	g cm^{-3}	lb ft^{-3}
○ $SrO \cdot SiO_2$	3.54	221
□ $2\ SrO \cdot SiO_2$	3.84	240

PROPERTIES OF STRONTIUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-9	298		$SrO \cdot SiO_2$.	
□	59-9	298		$2\ SrO \cdot SiO_2$.	

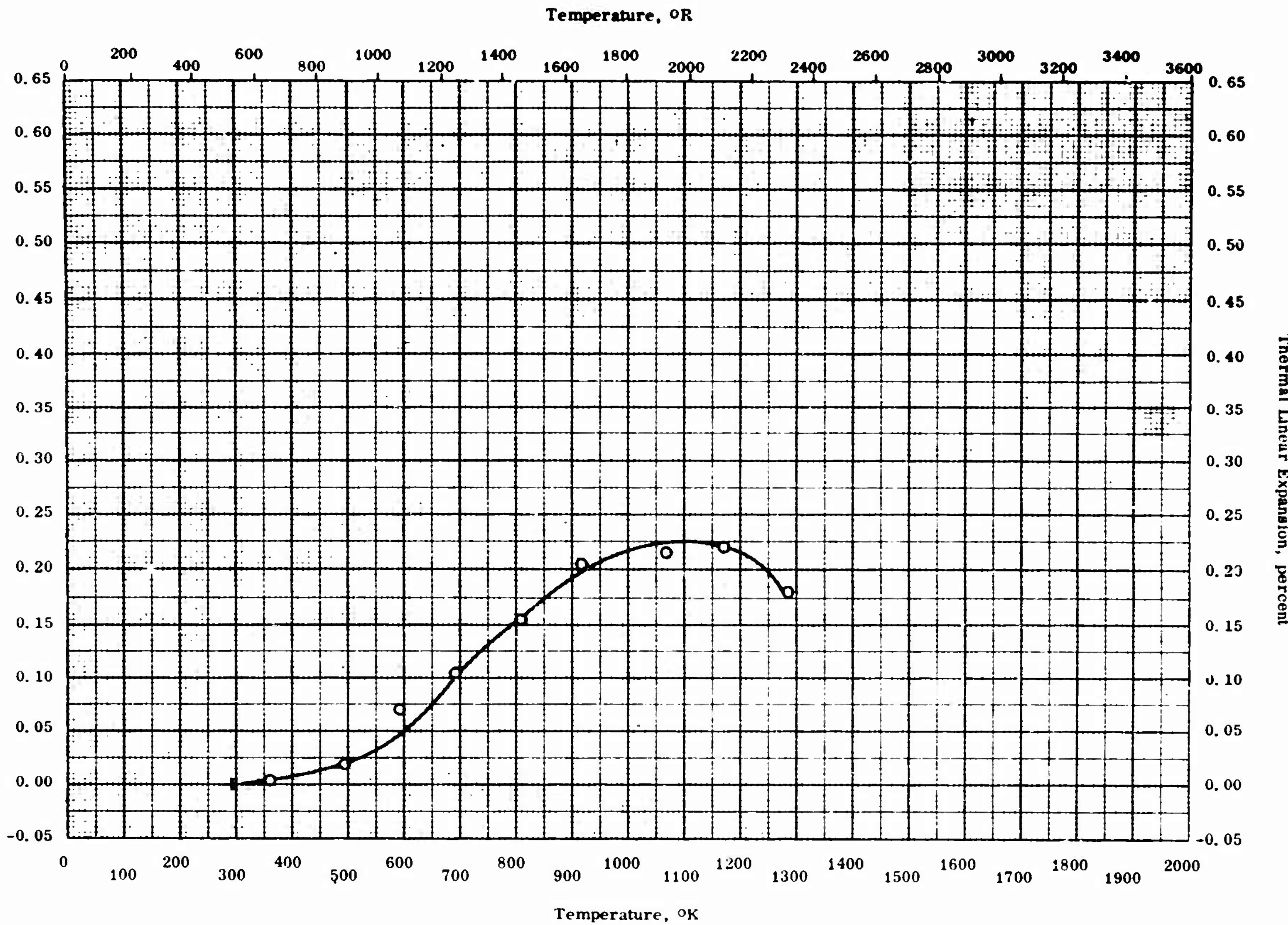


THERMAL LINEAR EXPANSION -- STRONTIUM ALUMINUM SILICATE

THERMAL LINEAR EXPANSION -- STRONTIUM ALUMINUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-36	298-1273	2	$SrO \cdot Al_2O_3 \cdot 2SiO_2$; x-ray diffraction pattern quite similar to that of the $BaO \cdot Al_2O_3 \cdot 2SiO_2$ homolog; dimensions 4-3/8 in. long by 7/16 in. square.	$SrCO_3$, Al_2O_3, and SiO_2 (flint) ball milled together in 1 : 1 : 2 ratio, fired to 1400 C for 4 hrs, reground to -150 mesh, mixed with 15 binder (40 g Carbowax 20 M, 20 cc of 2 Methocel solution and 40 cc H_2O), dried, pressed into bar at 8400 psi, and fired at 1450 C for 4 hrs; measured with heating rate of 3 C min^{-1}.
△	64-17	298-1273		$SrO \cdot Al_2O_3 \cdot 2SiO_2$, strontium feldspar; prepared from calcined alumina, $SrCO_3$, and -325 mesh SiO_2; dimensions 1/4 in. in diameter by 4 in. long.	Wet mixed in 3000 g batches for 24 hrs with 4500 g of 1 in. diameter alumina balls in 5-1/2 qt. alumina mill, dried to 200 C, formed into pressing granules using organic binder, dry pressed, fired to 1650 C at average heating rate of about 100 C hr^{-1}, soaked for 3 hrs, and cooled at average rate of about 100 C hr^{-1}.

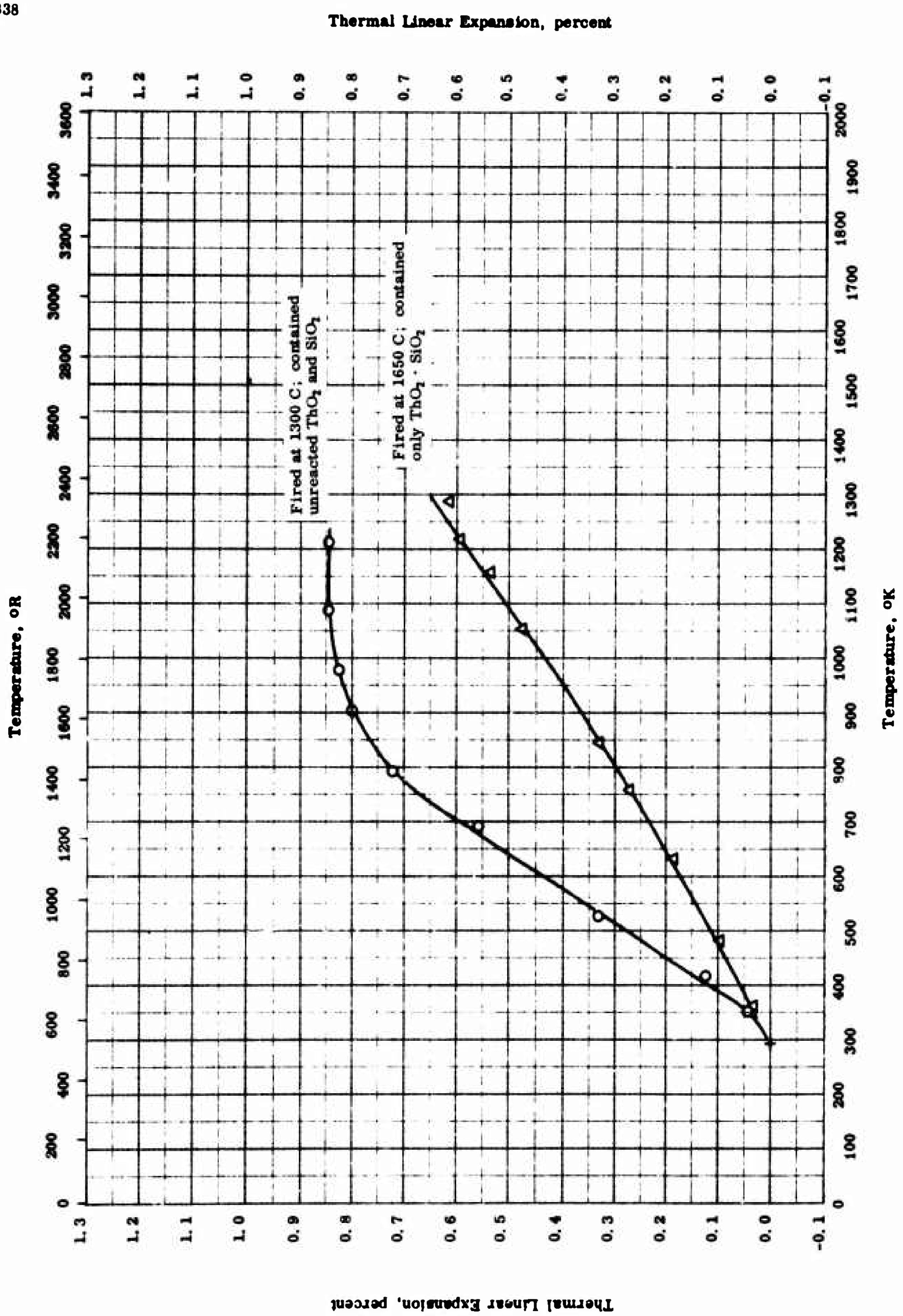


THERMAL LINEAR EXPANSION -- STRONTIUM COPPER SILICATE

THERMAL LINEAR EXPANSION -- STRONTIUM COPPER SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-36	299-1283	2	$SrCuSi_4O_{10}$; dimensions 4-3/8 in. long by 7/16 in. square.	Strontium carbonate, CuO, and SiO_2 mixed in 1 : 1 : 4 mole ratio, fired at 900 C for 4 hrs, reground to pass a 100 mesh screen, mixed with 15 binder (40 g Carbowax 20 M, 20 cc of 2 Methocel solution and 40 cc H_2O), pressed into bar at 6000 psi, and fired at 1215 C for 4 hrs; measured with heating rate of 3 C min^{-1}.

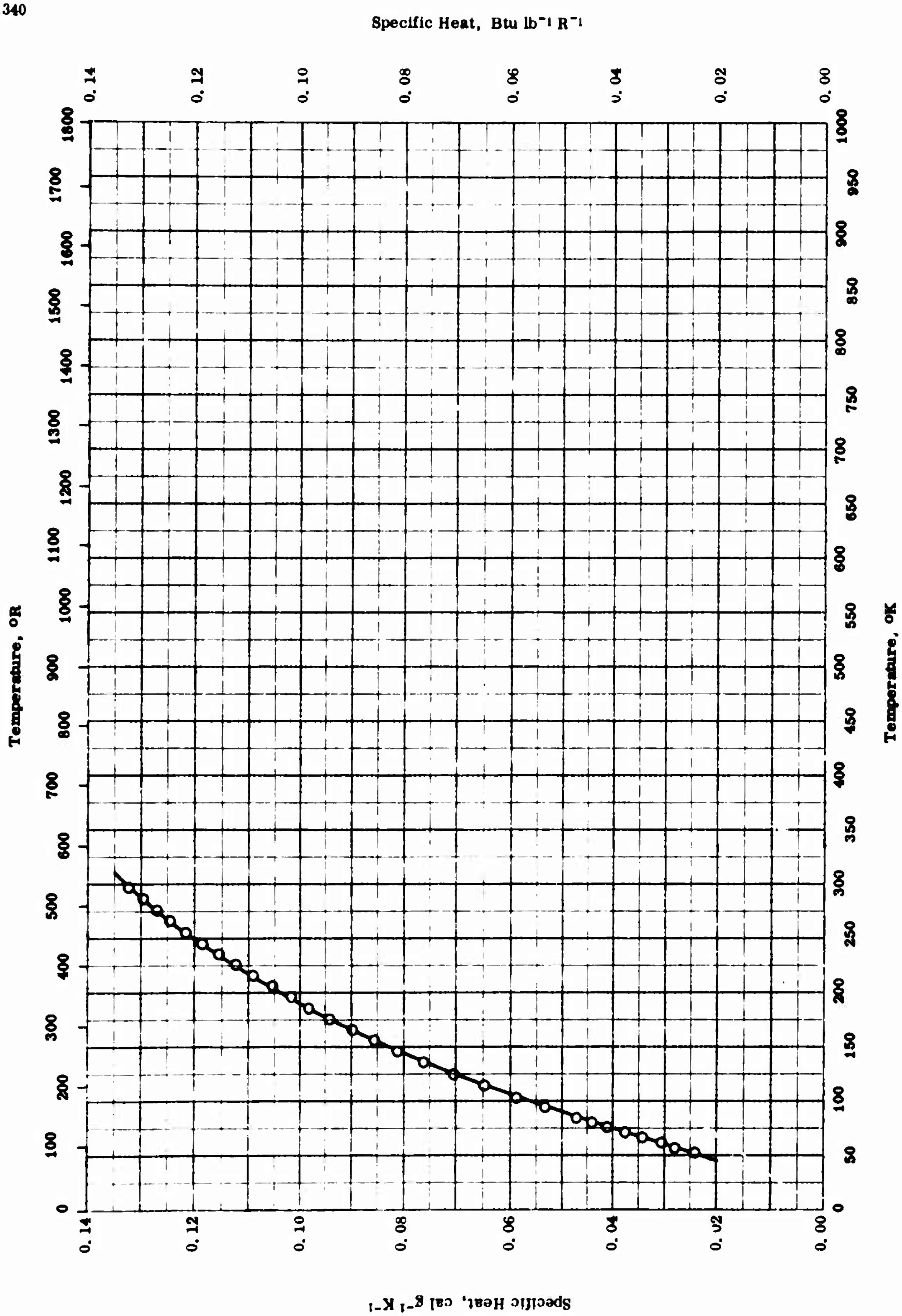


THERMAL LINEAR EXPANSION -- THORIUM ORTHOSILICATE

THERMAL LINEAR EXPANSION -- THORIUM ORTHOSILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-18	293-1212	2	$ThO_2 \cdot SiO_2$; x-ray analysis indicated the presence of $ThO_2 \cdot SiO_2$ and unreacted ThO_2 and SiO_2; dimensions 4 in. long by 7/16 in. square.	Thorium nitrate and flint in a 1 : 1 mole ratio heated at 1100 C for 4 hrs in electric muffle furnace, mixed with 15 binder solution (40 g Carbowax 20 M, 20 cc Methocel solution and 40 cc H_2O), pressed at 5000 psi, and fired at 1300 C for 2 hrs; measured with heating rate of 2 C min^{-1}.
△	60-36	293-1288	2	$ThO_2 \cdot SiO_2$; x-ray analysis indicated the presence of $ThO_2 \cdot SiO_2$ only; dimensions 4-3/8 in. long by 7/16 in. square.	Prepared same as above except fired at 1675 C for 6 hrs; measured with heating rate of 3 C min^{-1}.

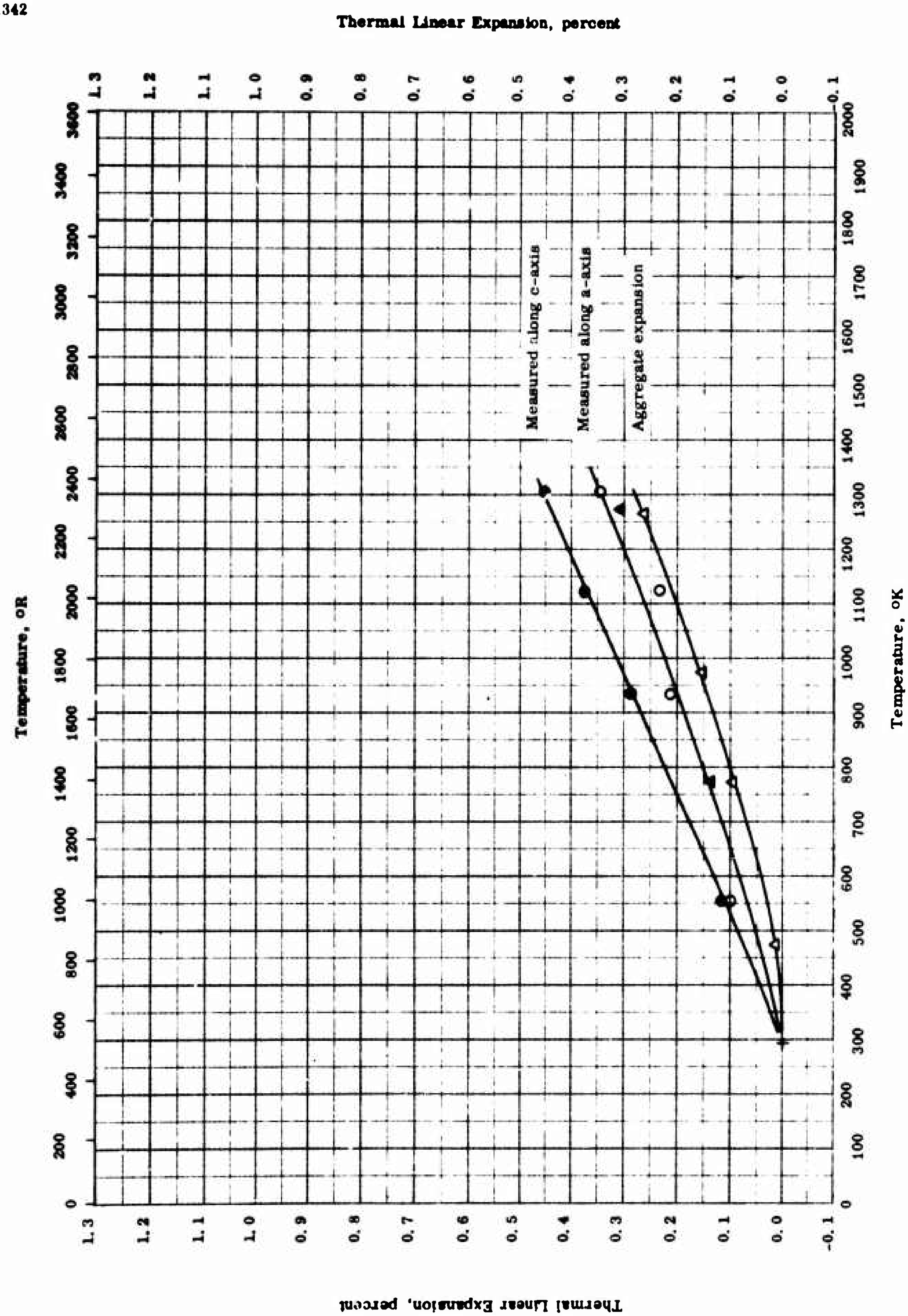


SPECIFIC HEAT -- ZINC ORTHOSILICATE

SPECIFIC HEAT -- ZINC ORTHOSILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	51-19	53-298		Willemite, Zinc orthosilicate, Zn_2SiO_4; 72.95 ZnO, 26.92 SiO_2, and remainder impurities are probably Al_2O_3, Fe_2O_3 and MgO.	



THERMAL LINEAR EXPANSION -- ZINC ORTHOSILICATE

THERMAL LINEAR EXPANSION -- ZINC ORTHOSILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	64-19	293-1308		$2ZnO \cdot SiO_2$; 73.04 ZnO and 26.96 SiO_2; prepared from c. p. grade ZnO and silicic acid. [Author's design : Sample A1]	Raw materials mixed together, dried, and heat treated; measured along a-axis by x-ray diffraction.
●	64-19	293-1308		Same as above.	Same as above except measured along c-axis.
△	64-19	293-1265		Same as above.	Raw materials mixed together, dried, pressed into 1 cm by 1 cm by 10 cm bars at 500 psi, and heat treated; aggregate expansion measured with heating rate of 125 C hr^{-1}.
▲	60-35	298-1273		$2ZnO \cdot SiO_2$.	

PROPERTIES OF ZIRCONIUM ORTHOSILICATE

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density.	4.54	283
Melting Point	2823*	5081*

*Handbook of Chemistry and Physics. (Ref. 64-16)

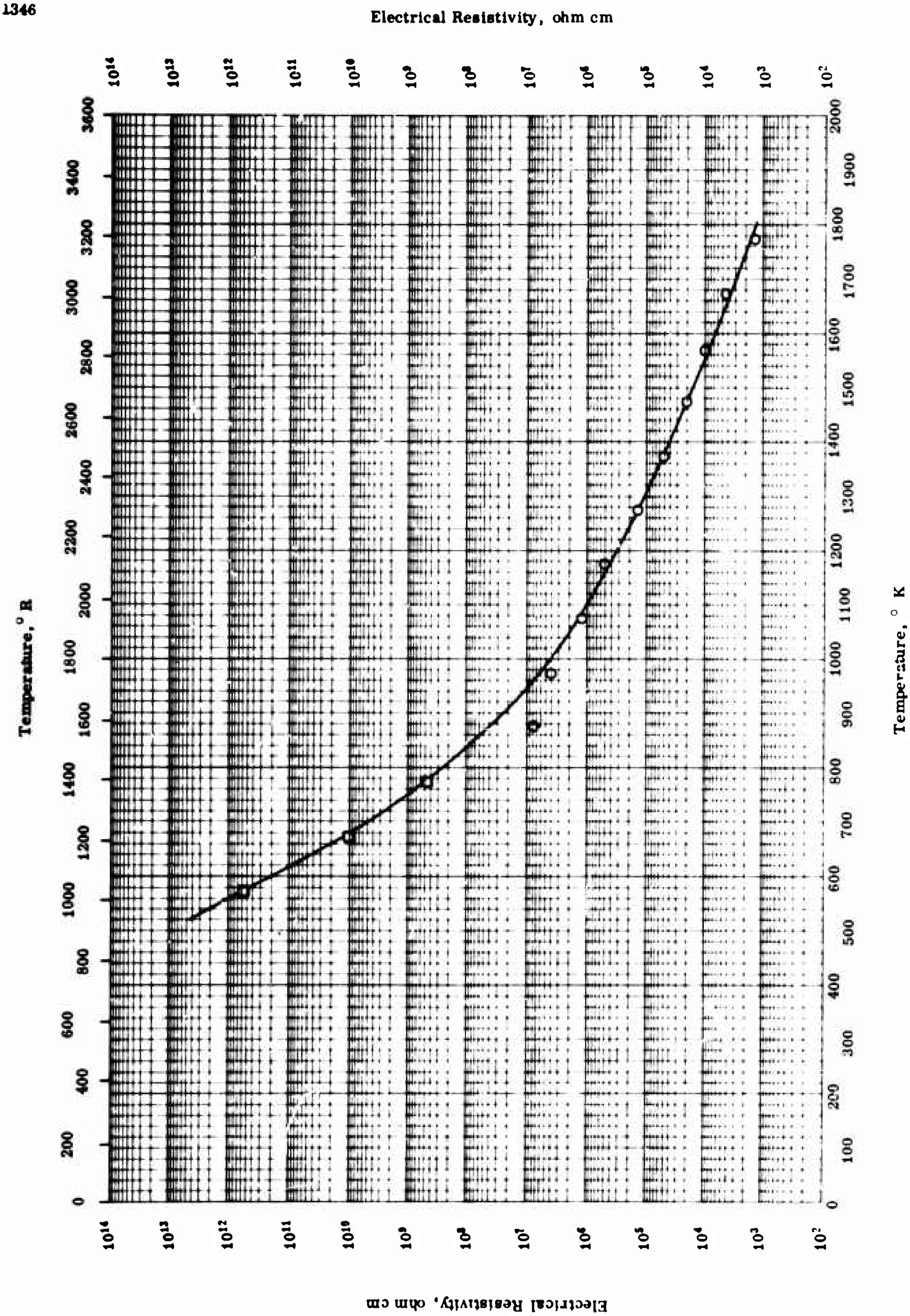
REPORTED VALUES

Density		$g\ cm^{-3}$	$lb\ ft^{-3}$
	○	4.54	283
	□	3.73 ± 0.01	232.8 ± 0.6
	△	4.04	252

PROPERTIES OF ZIRCONIUM ORTHOSILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	50-9	298		Zircon; 48.80 Zr, 33.98 O_2, 15.86 Si, 0.82 combined C, 0.01 > free C.	Hot-pressed; author computes density 4.72 g cm^{-3} from lattice measurement by other.
□	57-13	298		Zircon 475.	Density by weight in air and in Kerosene.
△	62-6	298		65 - 66 ZrO_2, 33 - 34 SiO_2, 1.0 > Al_2O_3, 0.10 > Fe_2O_3, 0.3 > TiO_2 and 0.2 > others; 85% theoretical density.	Slip-cast and sintered; max. temperature exposure 3710 F.

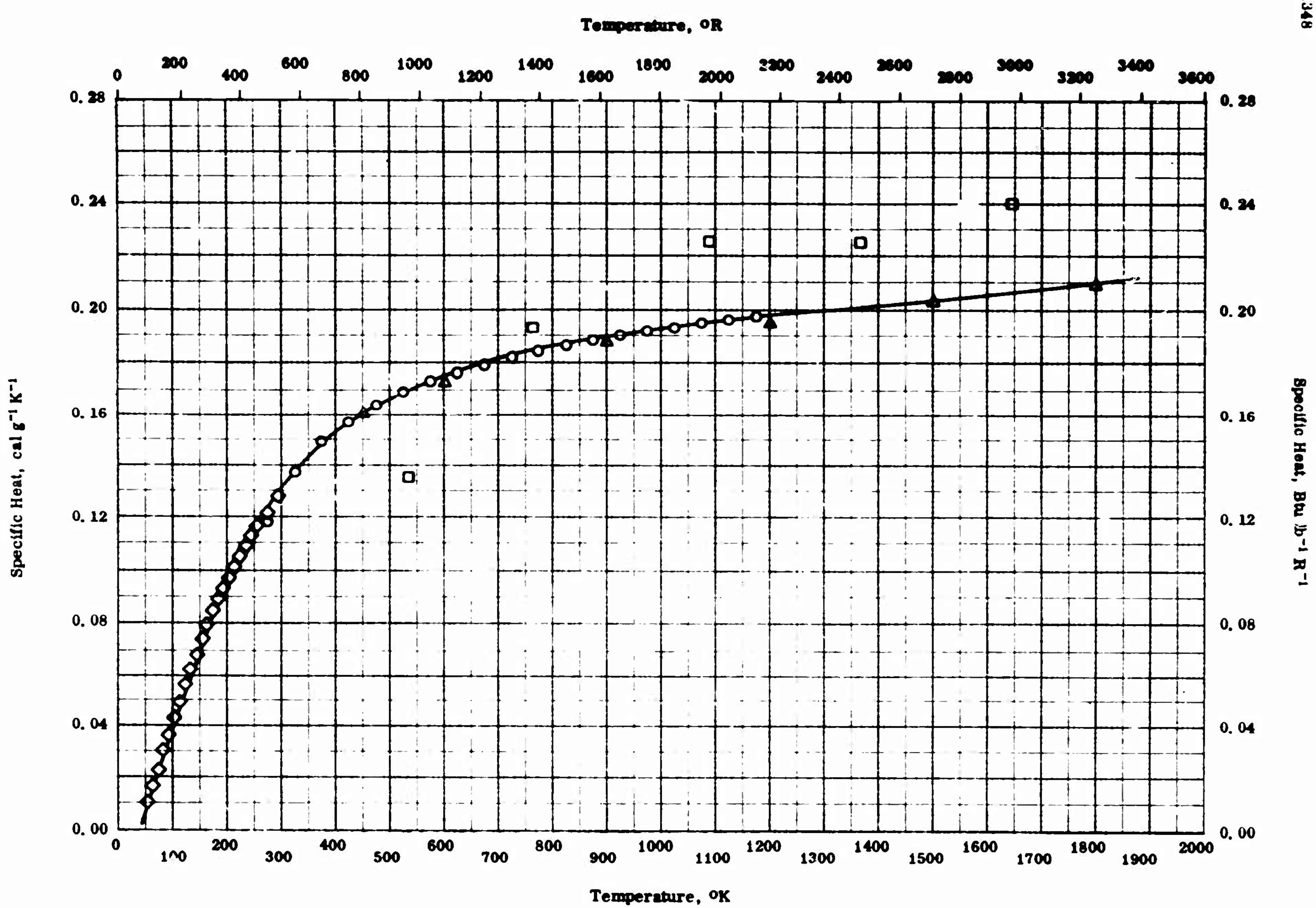


ELECTRICAL RESISTIVITY - ZIRCONIUM ORTHOSILICATE

ELECTRICAL RESISTIVITY -- ZIRCONIUM ORTHOSILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-16	873-1773		Zircon; 65 ZrO_2 and 35 SiO_2; apparent porosity 30%.	> 42 pyrometric cone equivalent.
□	56-14	573-773		Zircon.	

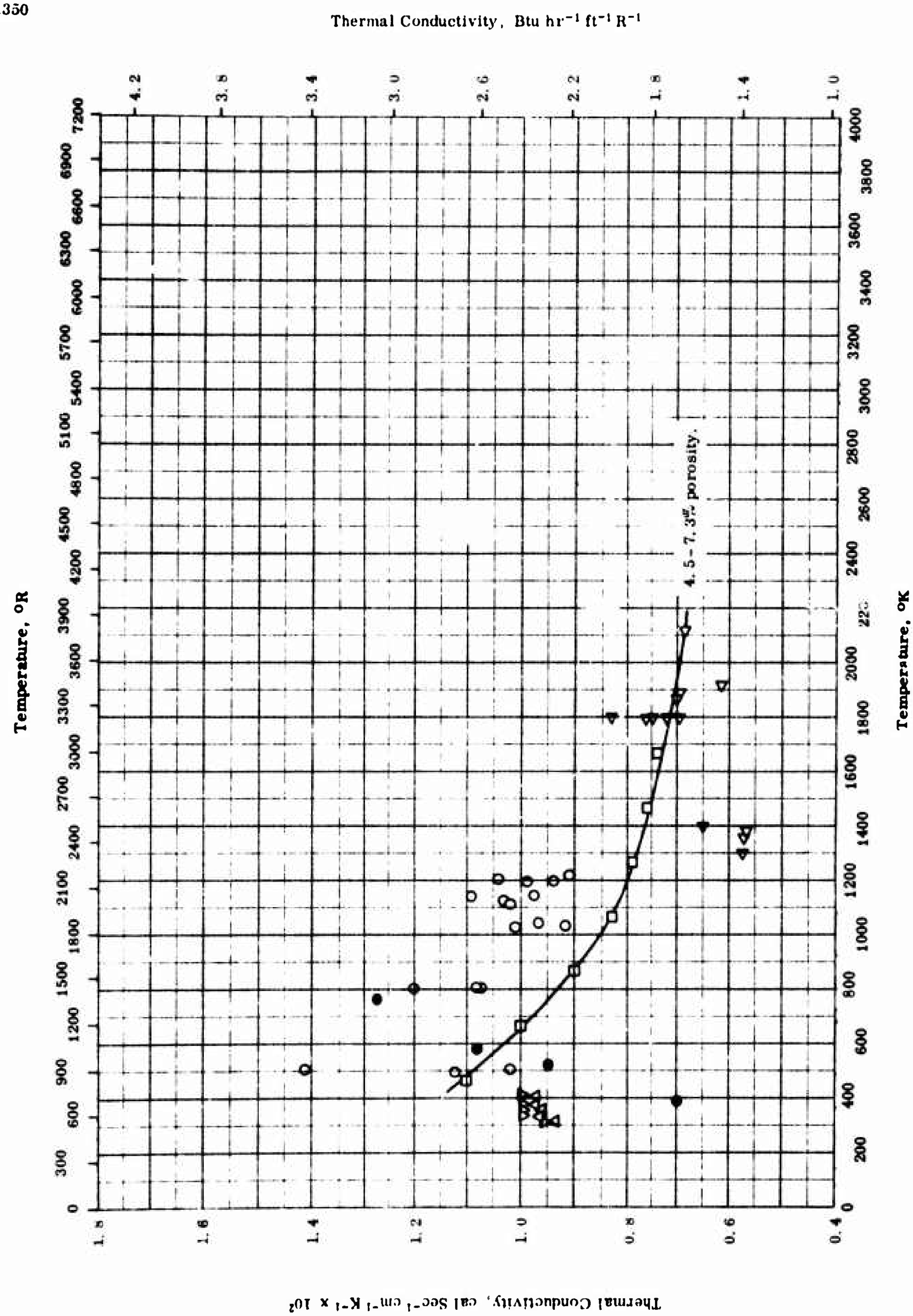


SPECIFIC HEAT -- ZIRCONIUM ORTHOSILICATE

SPECIFIC HEAT -- ZIRCONIUM ORTHOSILICATE

REFERENCE INFORMATION

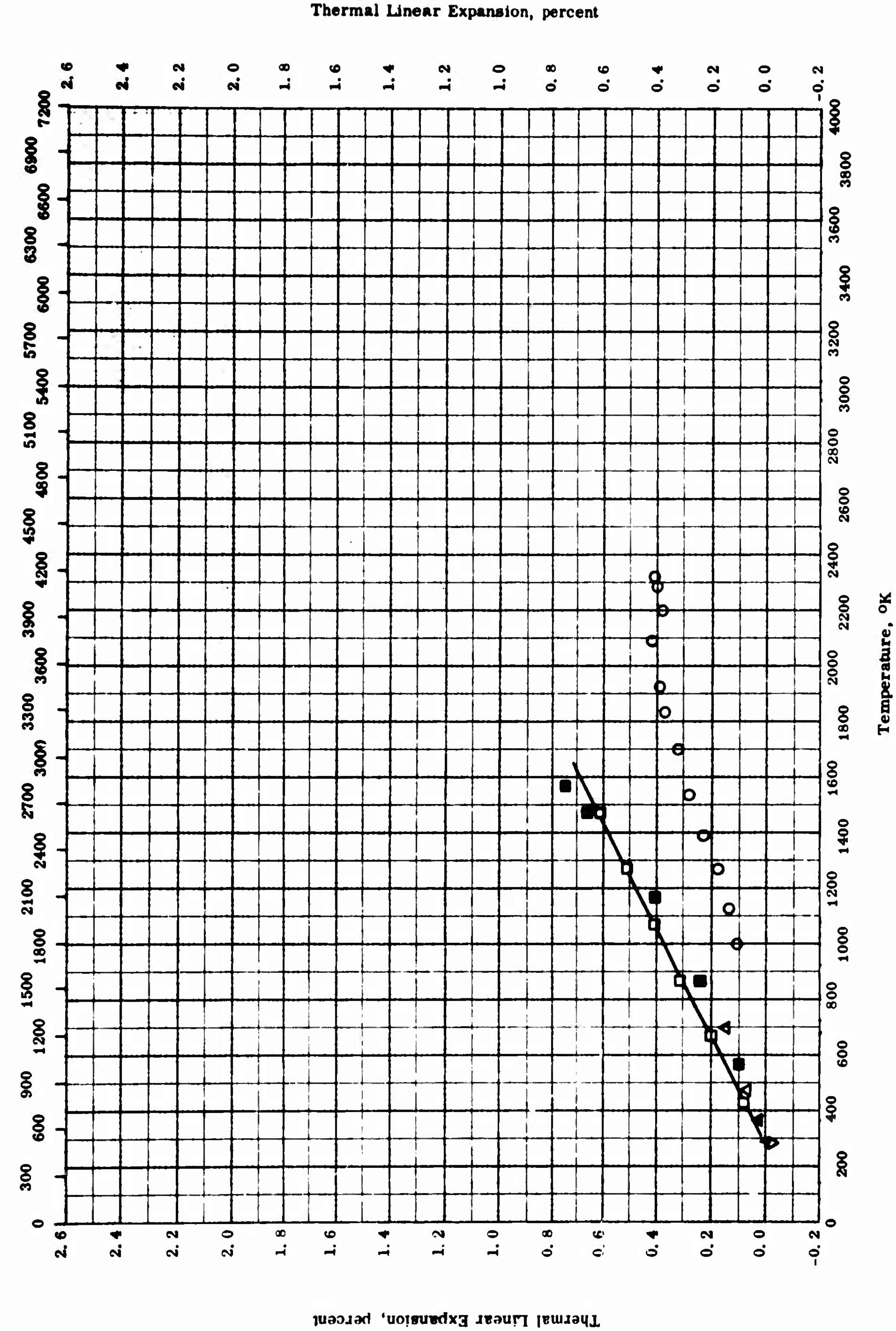
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-32	273-1173	0.25	$ZrO_2 \cdot SiO_2$; 65.4 ZrO_2, 33.2 SiO_2, 0.1-1 Al, 0.1-1 Ti, 0.01-0.1 Fe, 0.01> Ag, 0.01> Ca, 0.01> Cu, and 0.0001> Mn.	Fired and sintered to form small cylinders.
□	60-14 also 62-6	533-2000		Taylor Zircon CZ-5, $ZrO_2 \cdot SiO_2$; 65-66 ZrO_2, 33-34 SiO_2, 1 ≥ Al_2O_3, 0.3 ≥ TiO_2, 0.1 ≥ Fe_2O_3, and 0.2 ≥ others; density 252 lb ft^{-3}.	Slip-cast and sintered.
△	50-6	298-1800		$ZrSiO_4$; 66.3 ZrO_2 including HfO_2 with 1.15 Hf, 33.6 SiO_2 and 0.4 Fe_2O_3.	
◇	41-7	53-295		98.6 $ZrSiO_4$, 1.3 SiO_2 and 0.4 Fe_2O_3.	Corrected for Fe_2O_3 and excess SiO_2.



THERMAL CONDUCTIVITY -- ZIRCONIUM ORTHOSILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	54-1	473-1673		$ZrO_2 \cdot SiO_2$; polycrystal Superpax Zircon with a mean particle size of 5 microns; bulk density 3.69 - 3.79 g cm^{-3} and porosity 4.5 - 7.3%.	Acid treated with 1 N. HCe, slip-cast at a PH of 3.0; and then fired at 1550 C.
△	53-3	319-412		Single crystal with some impurities.	Measured parallel to c-axis.
▽	53-3	319-414		Same as above.	Measured perpendicular to c-axis.
○	62-6	503-1219	2 - 4	Taylor Zircon CZ-5; 65 - 66 ZrO_2, 33 - 34 SiO_2, 1.0 max Al_2O_3, 0.3 max TiO_2, 0.1 max Fe_2O_3, and 0.2 max others; density 252 lb ft^{-3} (81.5% theoretical density).	Slip-cast and sintered.
◁	62-6	1300-2117	2 - 4	Same as above.	Same as above; measured by another method.
●	43-1	388-772		Brazil Zircon; single crystal.	Measured normal to c-axis.

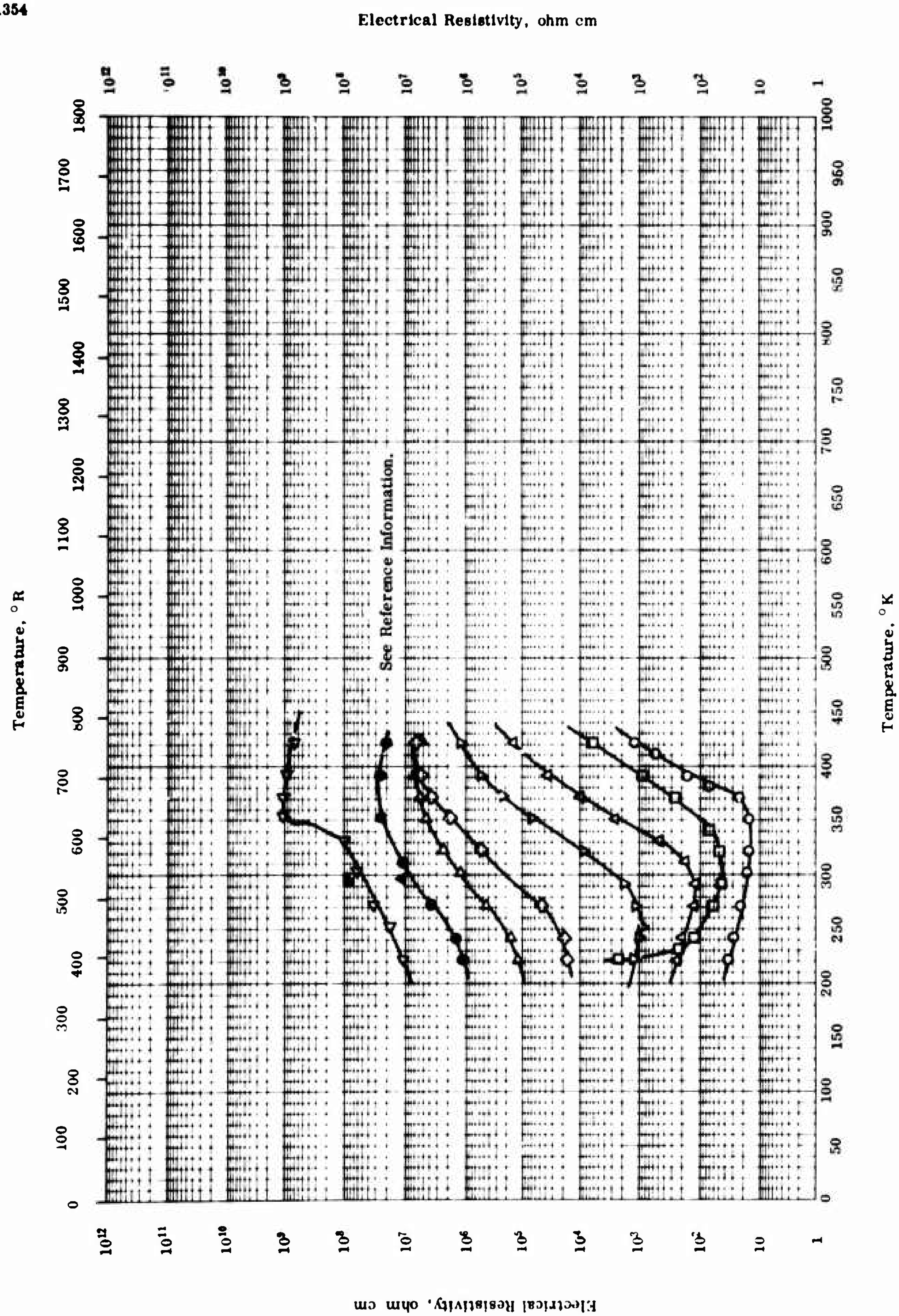


THERMAL LINEAR EXPANSION -- ZIRCONIUM ORTHOSILICATE

THERMAL LINEAR EXPANSION -- ZIRCONIUM ORTHOSILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	62-6	294-2316	2	$ZrSiO_4$, Taylor zircon CZ-5 from The Charles Taylor Sons Co.; calculated composition 49.75 Zr and 15.33 Si; elements found by semi-quantitative emission spectrography before exposure 0.2 Al, 0.1 Ti, 0.1 Fe, and trace of Mg and Hf; after exposure 0.13 C; density at 25 C in g cm^{-3} by ASTM method B311-58 before exposure 4.3, after exposure 3.3; initial length 2.9420 in. [Author's design: Run SRI-E6]	Slip-cast and sintered; measured in helium atm; sample softened on post inspection.
▽	62-6	294-2316	2	Same as above.	Cooling cycle for above sample.
□	54-18	293-1473		Prepared from 99.9 pure ZrO_2 and quartz.	Equimolar 325 mesh powders heated to 1550 C, milled, heated again, pressed at 20,000 psi, and fired 2 hrs at 1550 C.
■	56-28	573-1573		Fine grain zircon, $ZrSiO_4$.	
△	50-9	300-867		48.80 Zr, 33.98 O_2, 15.86 Si, 0.82 combined C, and 0.01 > free C; density 283 lb ft^{-3}.	Hot pressed in graphite mold; tested at 4 C min^{-1} rise.
▲	50-16	293-373		66.46 total $ZrO_2 + HfO_2$, 32.45 SiO_2, 0.99 total Al_2O_3, and rare-earth oxides, 0.29 Fe_2O_3, 0.15 TiO_2, 0.08 Mn_3O_4, trace BaO, and no CaO or MgO.	Fired at 1750 C.



ELECTRICAL RESISTIVITY -- BARIUM CERIUM TITANATE STANNATE

ELECTRICAL RESISTIVITY -- BARIUM CERIUM TITANATE STANNATE

REFERENCE INFORMATION

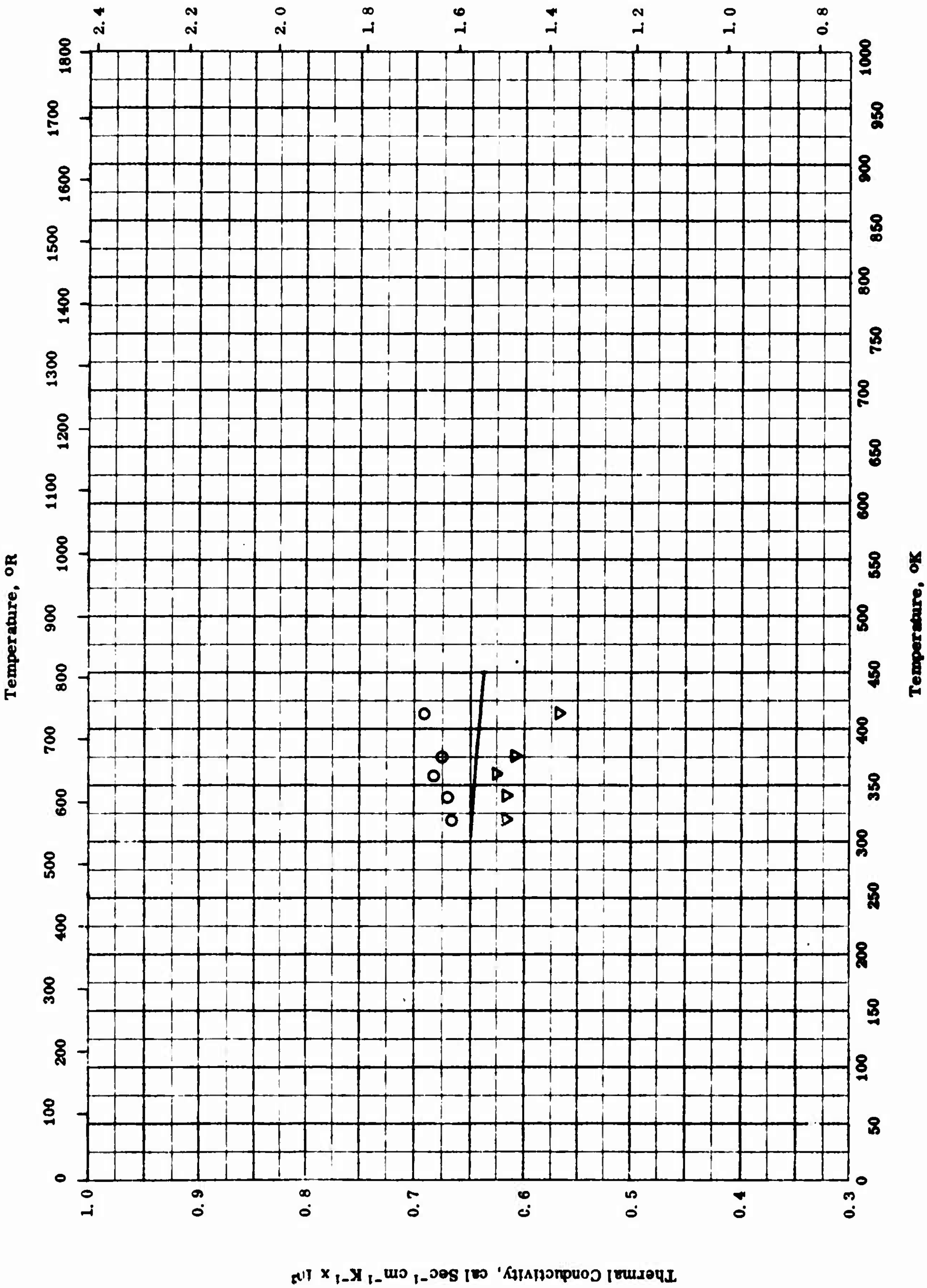
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-23	223-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.98}Sn_{0.02})O_3$; prepared from barium titanyl oxalate, cerium oxalate, titanium dioxide (all 99.99 purity), and 99.8 tin (ic) oxide; grayish blue color.	Calcined calculated amount of raw materials at 1000 C for 1 hr, and crushed to 80 mesh, moistened and pressed with 600 kg - cm^{-2} to disks of 2 mm thick and 20 mm dia., fired at 1350 - 1400 C for 1-2 hrs; equiv water absorption 1.17%; color, grayish blue.
□	61-23	223-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.95}Sn_{0.05})O_3$; same as above; grayish blue.	Same as above; equiv water absorption 0.63%.
△	61-23	223-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.90}Sn_{0.10})O_3$; same as above; light grayish blue.	Same as above; equiv water absorption 1.31%.
▽	61-23	223-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.85}Sn_{0.15})O_3$; same as above; light grayish blue.	Same as above; equiv water absorption 2.49%.
◇	61-23	223-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.80}Sn_{0.20})O_3$; same as above; light grayish blue.	Same as above; equiv water absorption 5.58%.
▷	61-23	223-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.75}Sn_{0.25})O_3$; same as above; light grayish blue.	Same as above; equiv water absorption 5.86%.
●	61-23	223-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.70}Sn_{0.30})O_3$; same as above; light grayish blue.	Same as above; equiv water absorption 3.89%.
◁	61-23	223-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.65}Sn_{0.35})O_3$; same as above; light grayish blue.	Same as above; equiv water absorption 4.04%.
■	61-23	298		$(Ba_{0.999}Ce_{0.001})(Ti_{0.60}Sn_{0.40})O_3$; same as above; light grayish blue. (continued onto next page)	Same as above; equiv water absorption 11.78%.

ELECTRICAL RESISTIVITY -- BARIUM CERIUM TITANATE STANNATE (Continued)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▲	61-23	298		$(Ba_{0.999}Ce_{0.001})(Ti_{0.50}Sn_{0.50})O_3$; same as above; very light blue.	Same as above; equiv water absorption 11.82%.

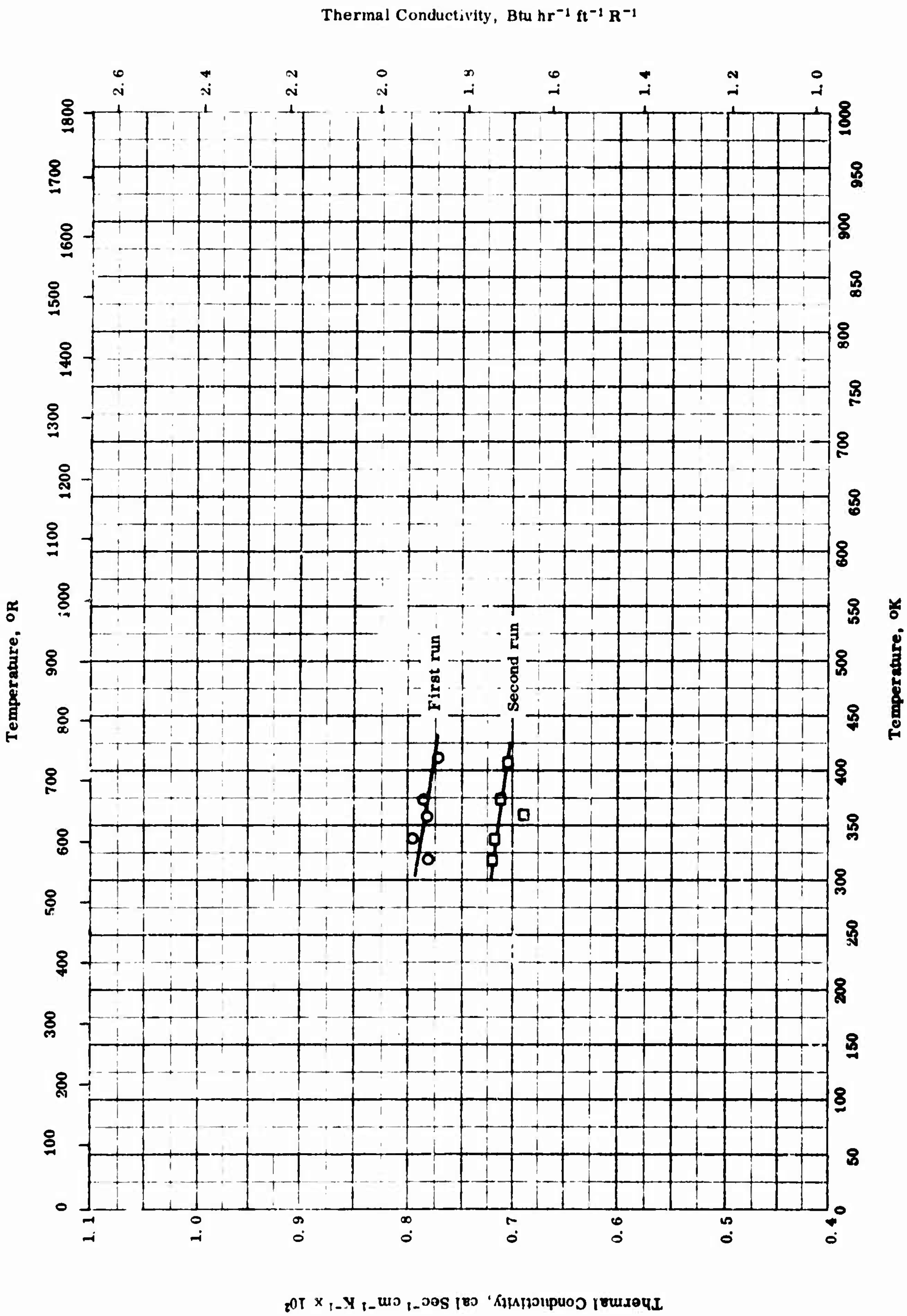
THERMAL CONDUCTIVITY -- BISMUTH STANNATE



THERMAL CONDUCTIVITY -- BISMUTH STANNATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▽	53-1	319-408		$Bi_2O_3 \cdot 3SnO_2$; density 477 lb ft^{-3}; Sample 1.	Used Pt alloy glaze for ceramic to Cu bond.
○	53-1	319-413		$Bi_2O_3 \cdot 3SnO_2$; density 474 lb ft^{-3}; Sample 2.	Same as above.

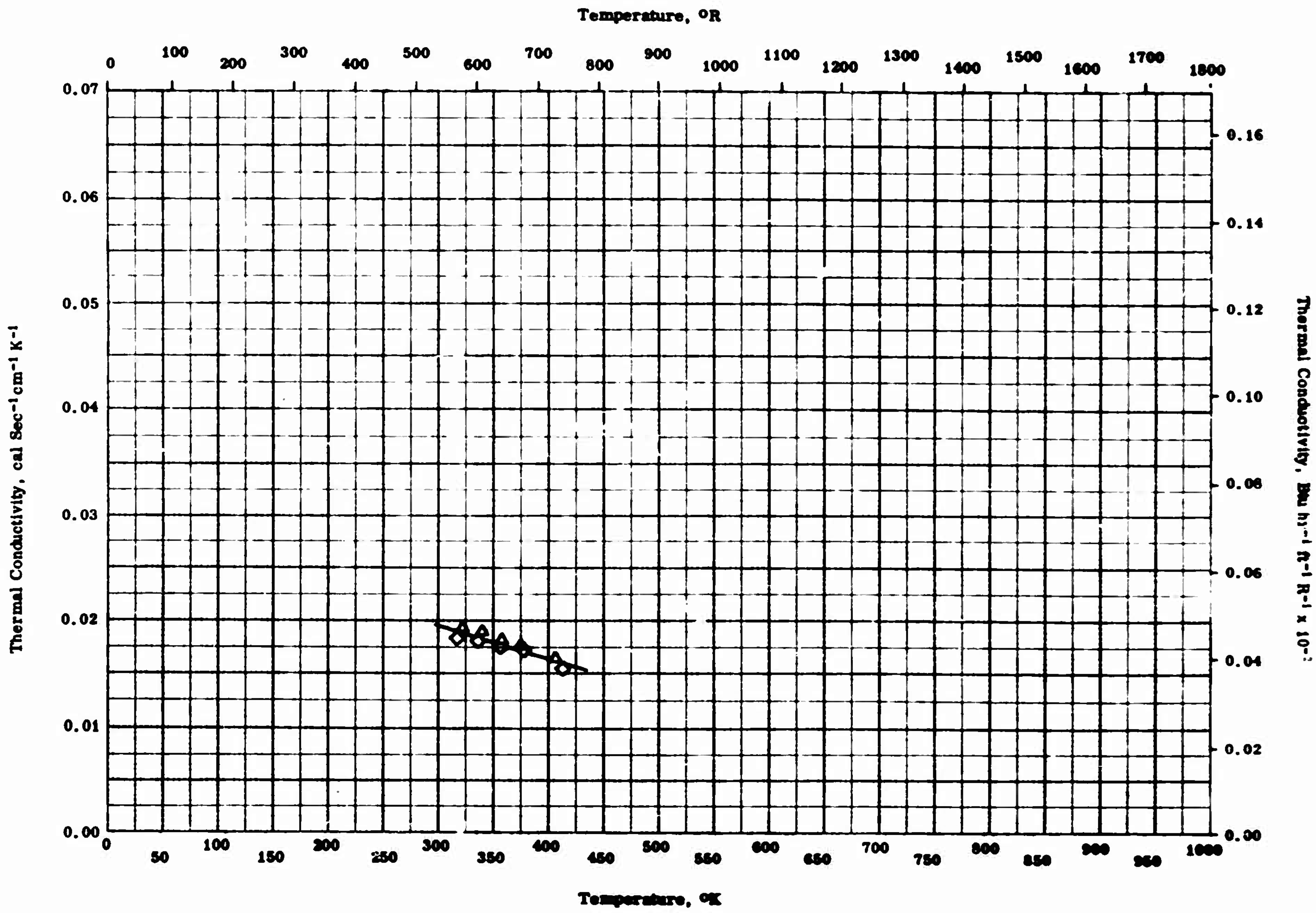


THERMAL CONDUCTIVITY -- CALCIUM STANNATE

THERMAL CONDUCTIVITY -- CALCIUM STANNATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-1	319-411		$CaO \cdot SnO_2$; density 318 lb ft^{-3} and water absorption 0.57%.	Pt alloy glaze for ceramic to Cu bond; run 1.
□	53-1	318-407		Same as above.	Same as above; run 2.

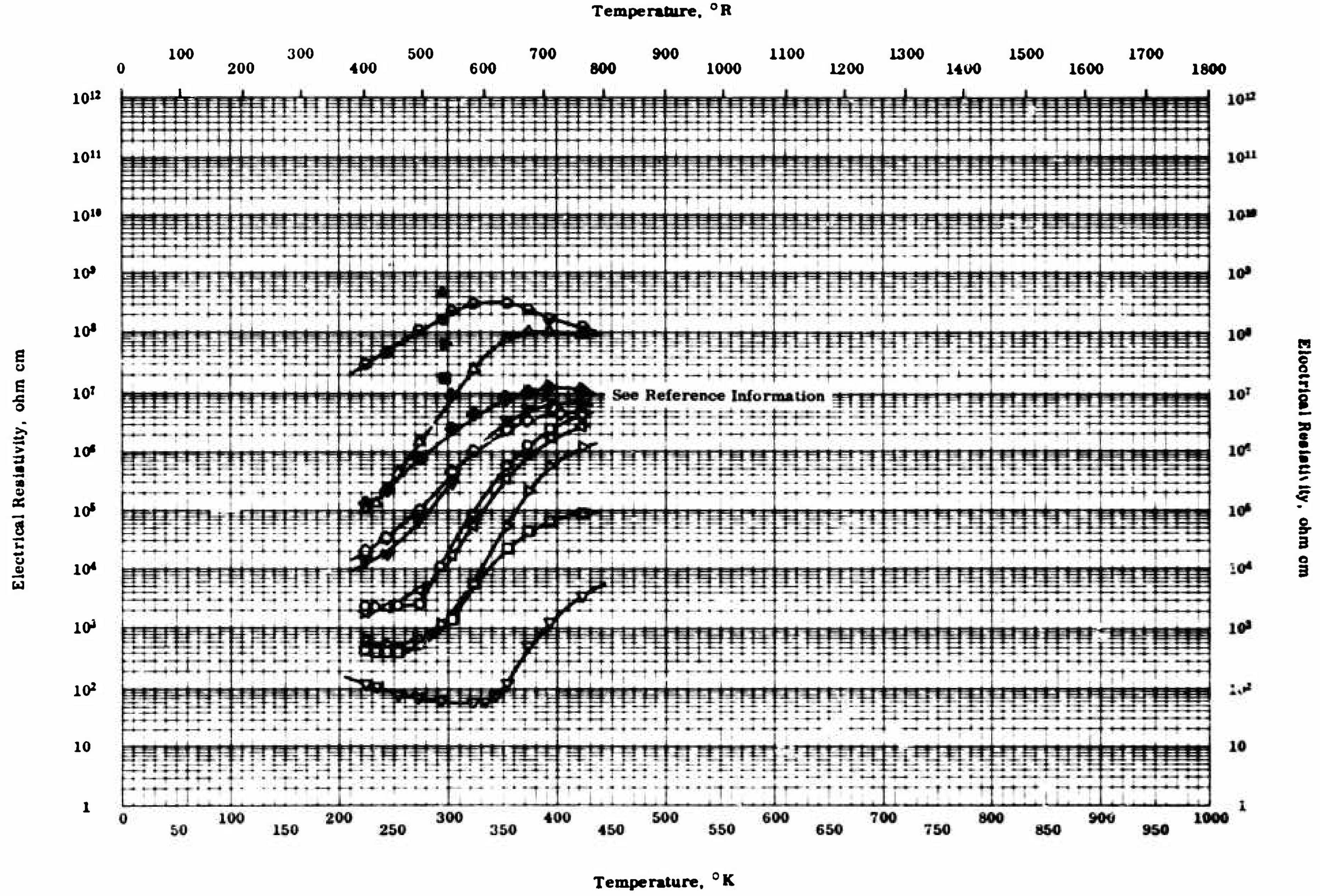


THERMAL CONDUCTIVITY -- MAGNESIUM STANNATE

THERMAL CONDUCTIVITY -- MAGNESIUM STANNATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
△	53-1	322-406		$MgO \cdot SnO_2$; density 323 lb ft^{-3}.	Used Pt alloy glaze for ceramic to Cu bond; Run 1.
◇	53-1	317-413		Same as above.	The above specimen; Run 2.



ELECTRICAL RESISTIVITY -- STRONTIUM BARIUM CERIUM TITANATE STANNATE

ELECTRICAL RESISTIVITY -- STRONTIUM BARIUM CERIUM TITANATE STANNATE

REFERENCE INFORMATION

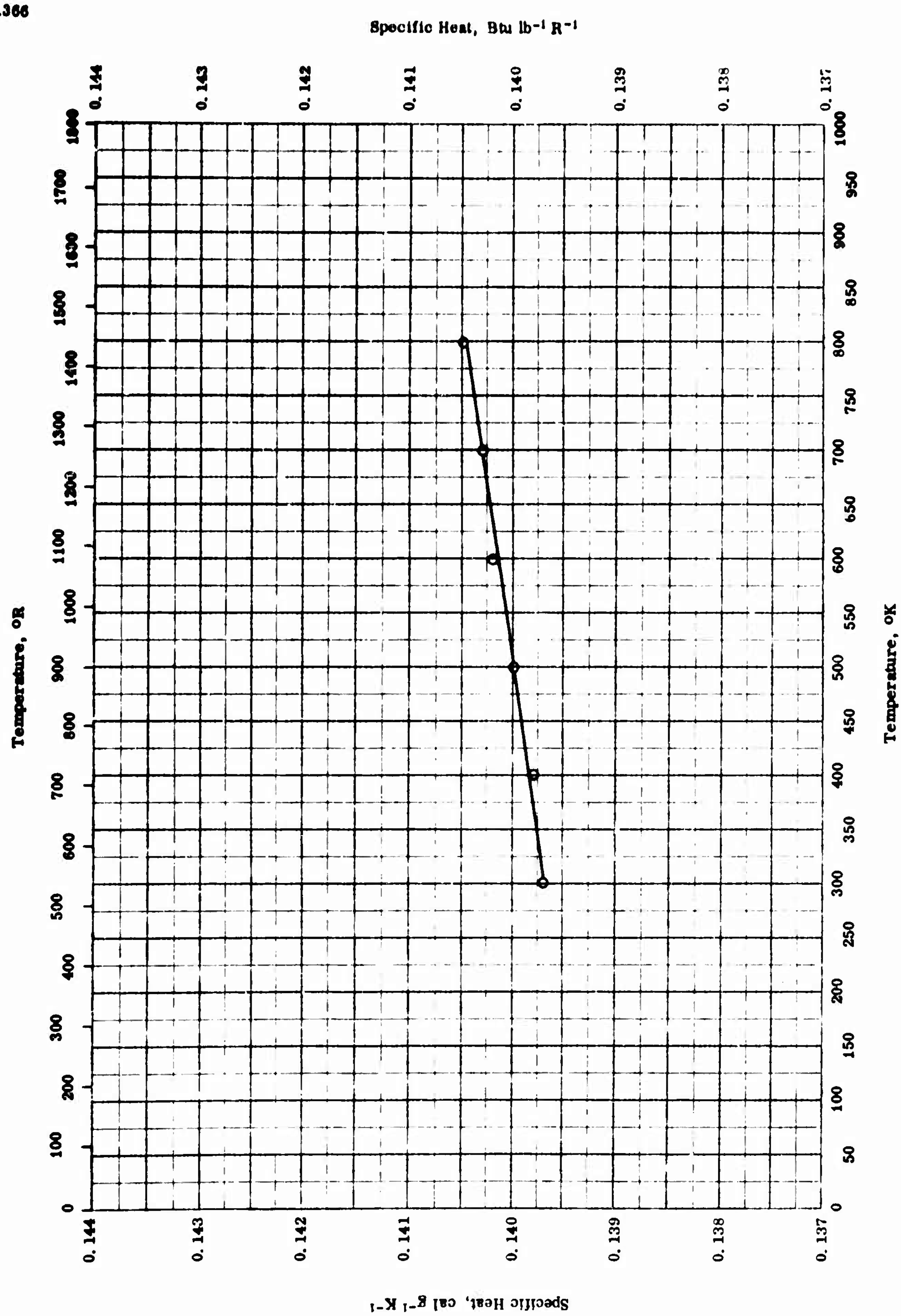
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-23	223-423		$(Ba_{0.699}Sr_{0.300}Ce_{0.001})(Ti_{0.94}Sn_{0.06})O_3$; prepared from 99.99 pure barium titanyl oxalate, 99.99 cerium oxalate, 99.9 pure strontium carbonate, 99.8 pure tin (ic) dioxide, and 99.99 titanium dioxide; very light blue color.	Calcined calculated amount of raw materials at 1000 C for 1 hr, crushed to 80 mesh, moistened and pressed with 600 Kg-cm^{-2} to disks of 2 mm thick and 20 mm dia. and then fired at 1350-1400 C for 1-2 hrs; equivalent water absorption 4.31%.
●	61-23	298		$(Ba_{0.499}Sr_{0.500}Ce_{0.001})(Ti_{0.90}Sn_{0.10})O_3$; same as above; light pink.	Same as above; equivalent water absorption 12.36%
□	61-23	223-423		$(Ba_{0.799}Sr_{0.200}Ce_{0.001})(Ti_{0.90}Sn_{0.10})O_3$; same as above; light grayish blue.	Same as above; equivalent water absorption 1.45%.
△	61-23	223-423		$(Ba_{0.699}Sr_{0.300}Ce_{0.001})(Ti_{0.85}Sn_{0.15})O_3$; same as above; very light blue.	Same as above; equivalent water absorption 5.16%.
▲	61-23	298		$(Ba_{0.599}Sr_{0.400}Ce_{0.001})(Ti_{0.80}Sn_{0.20})O_3$; same as above; light creamy.	Same as above; equivalent water absorption 8.21%.
■	61-23	298		$(Ba_{0.499}Sr_{0.500}Ce_{0.001})(Ti_{0.75}Sn_{0.25})O_3$; same as above; light creamy.	Same as above; equivalent water absorption 17.69%.
▽	61-23	223-423		$(Ba_{0.949}Sr_{0.050}Ce_{0.001})(Ti_{0.95}Sn_{0.05})O_3$; same as above; grayish blue.	Same as above; equivalent water absorption 0.42%.
▷	61-23	223-423		$(Ba_{0.899}Sr_{0.100}Ce_{0.001})(Ti_{0.90}Sn_{0.10})O_3$; same as above; grayish blue.	Same as above; equivalent water absorption 1.16%.
◇	61-23	223-423		$(Ba_{0.799}Sr_{0.200}Ce_{0.001})(Ti_{0.80}Sn_{0.20})O_3$; same as above; light grayish blue.	Same as above; equivalent water absorption 4.32%.

(Continued onto next page)

ELECTRICAL RESISTIVITY -- STRONTIUM BARIUM CERIUM TITANATE STANNATE (continued)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▲	61-23	298		$(Ba_{0.699}Sr_{0.300}Ce_{0.001})(Ti_{0.70}Sn_{0.30})O_3$; same as above; very light blue.	Same as above; equivalent water absorption 5.99%.
▽	61-23	223-423		$(Ba_{0.924}Sr_{0.075}Ce_{0.001})(Ti_{0.85}Sn_{0.15})O_3$; same as above; grayish blue.	Same as above; equivalent water absorption 2.53%.
▶	61-23	223-423		$(Ba_{0.899}Sr_{0.100}Ce_{0.001})(Ti_{0.80}Sn_{0.20})O_3$; same as above; grayish blue.	Same as above; equivalent water absorption 3.48%.
●	61-23	223-423		$(Ba_{0.849}Sr_{0.150}Ce_{0.001})(Ti_{0.70}Sn_{0.30})O_3$; same as above; light grayish blue.	Same as above; equivalent water absorption 4.54%.
◆	61-23	223-423		$(Ba_{0.949}Sr_{0.050}Ce_{0.001})(Ti_{0.75}Sn_{0.25})O_3$; same as above; light grayish blue.	Same as above; equivalent water absorption 6.15%.



SPECIFIC HEAT -- SODIUM TELLURATE

SPECIFIC HEAT -- SODIUM TELLURATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	62-10	421-804	0.5	99.99 $Na_2O \cdot T$[illegible] 0.1> Ca, and traces AgAl.	Sealed in argon atm.

PROPERTIES OF ALUMINUM TITANATE

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density.	3.681	229.8
Melting Point	2163	3893

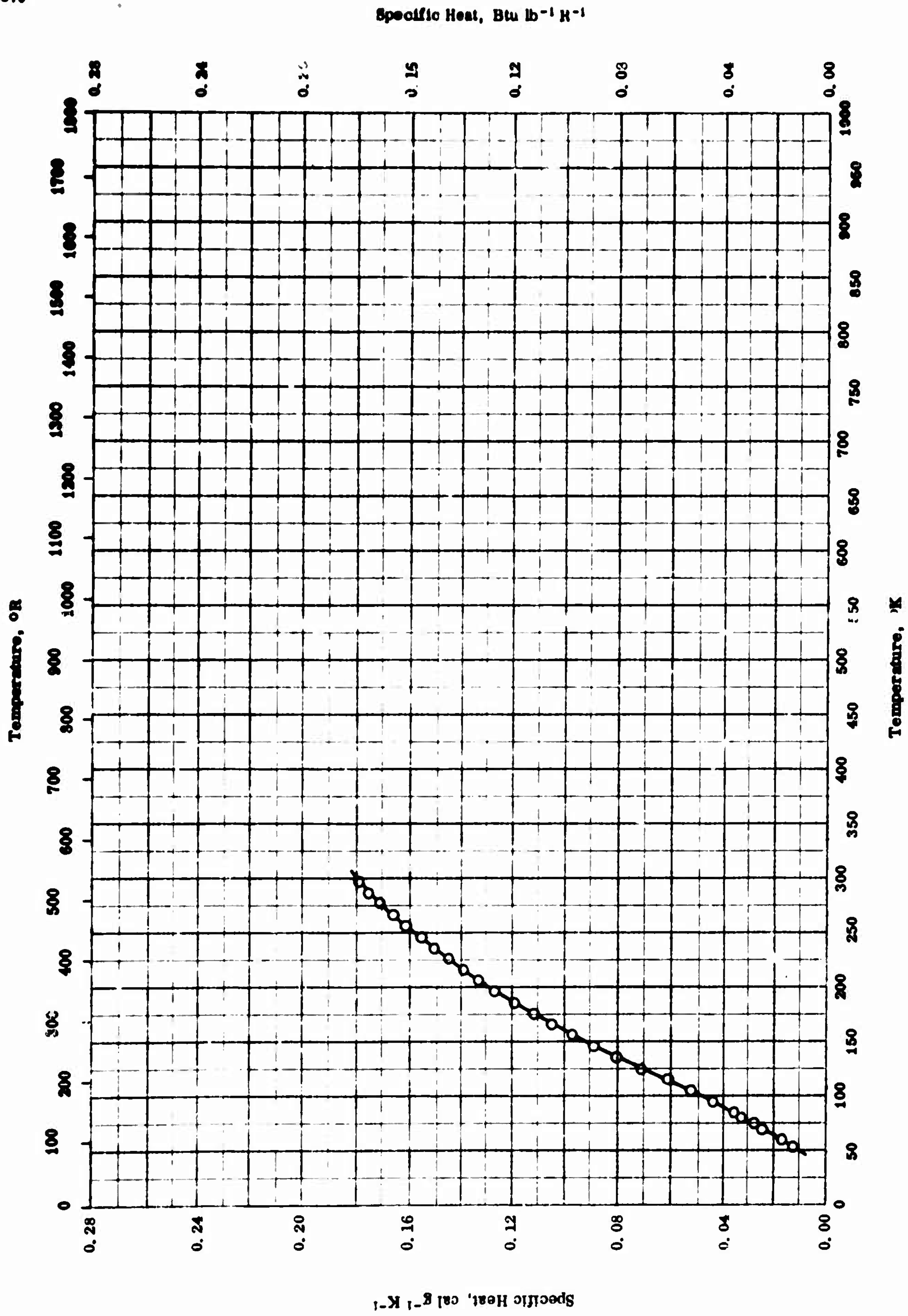
REPORTED VALUES

Density		g cm^{-3}	lb ft^{-3}
	○	3.681	229.8
Melting Point		K	R
	□	2163 ± 10	3893 ± 18

PROPERTIES OF ALUMINUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-30	2[illegible]		$Al_2O_3 \cdot TiO_2$.	Fired at 1600 C.
□	53-30	2150-2172		$Al_2O_3 \cdot TiO_2$.	Fired at 1600 C.

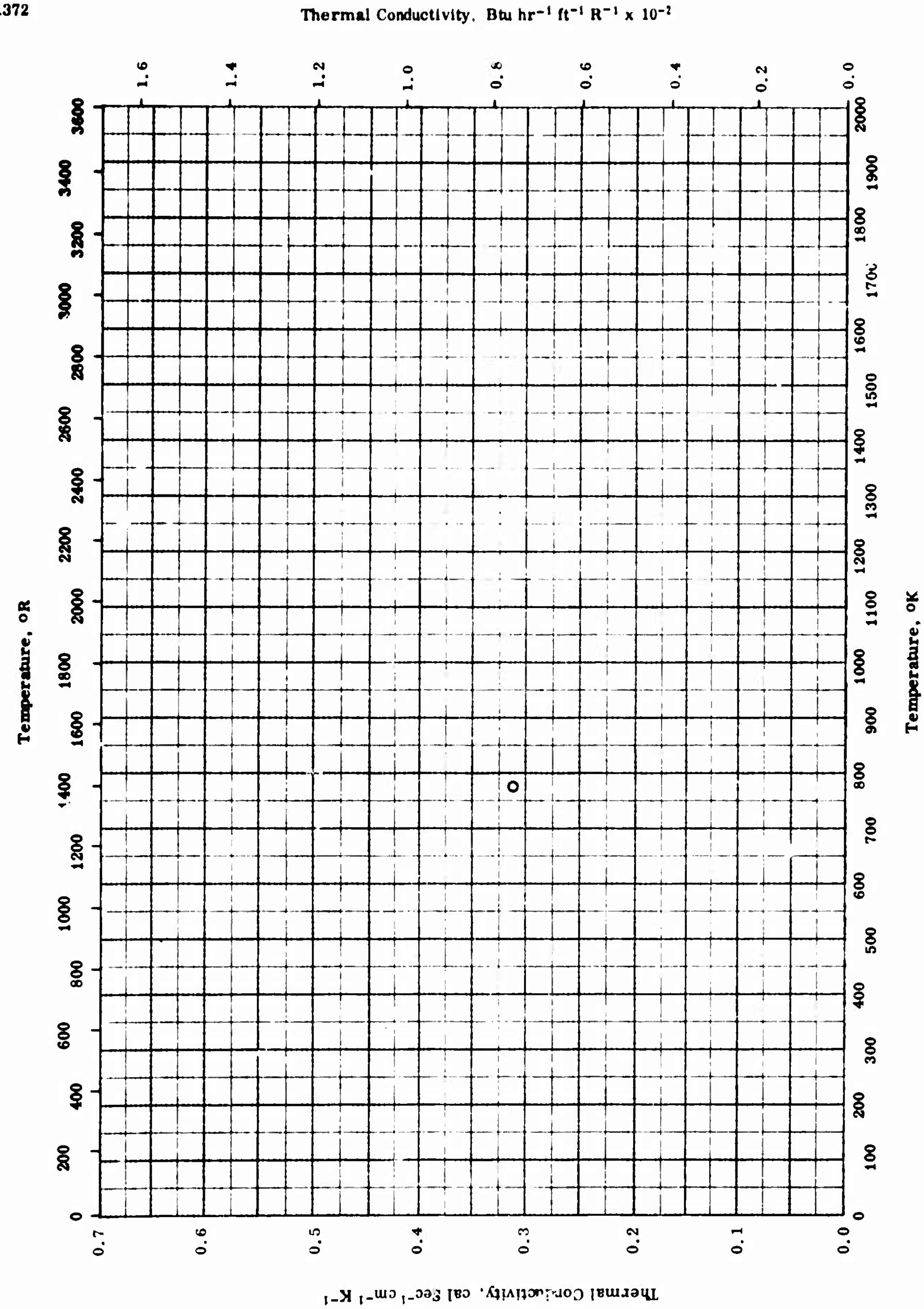


SPECIFIC HEAT -- ALUMINUM TITANATE

SPECIFIC HEAT -- ALUMINUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-34	53-298		Al_2TiO_5; 43.95 TiO and 0.06 SiO; prepared from pure hydrated alumina and pure titania.	Pressed into pellets and heated five times for 96 hrs between 1400 and 1500 C and 43 hrs between 1500 and 1570 C; quenched to room temperature.

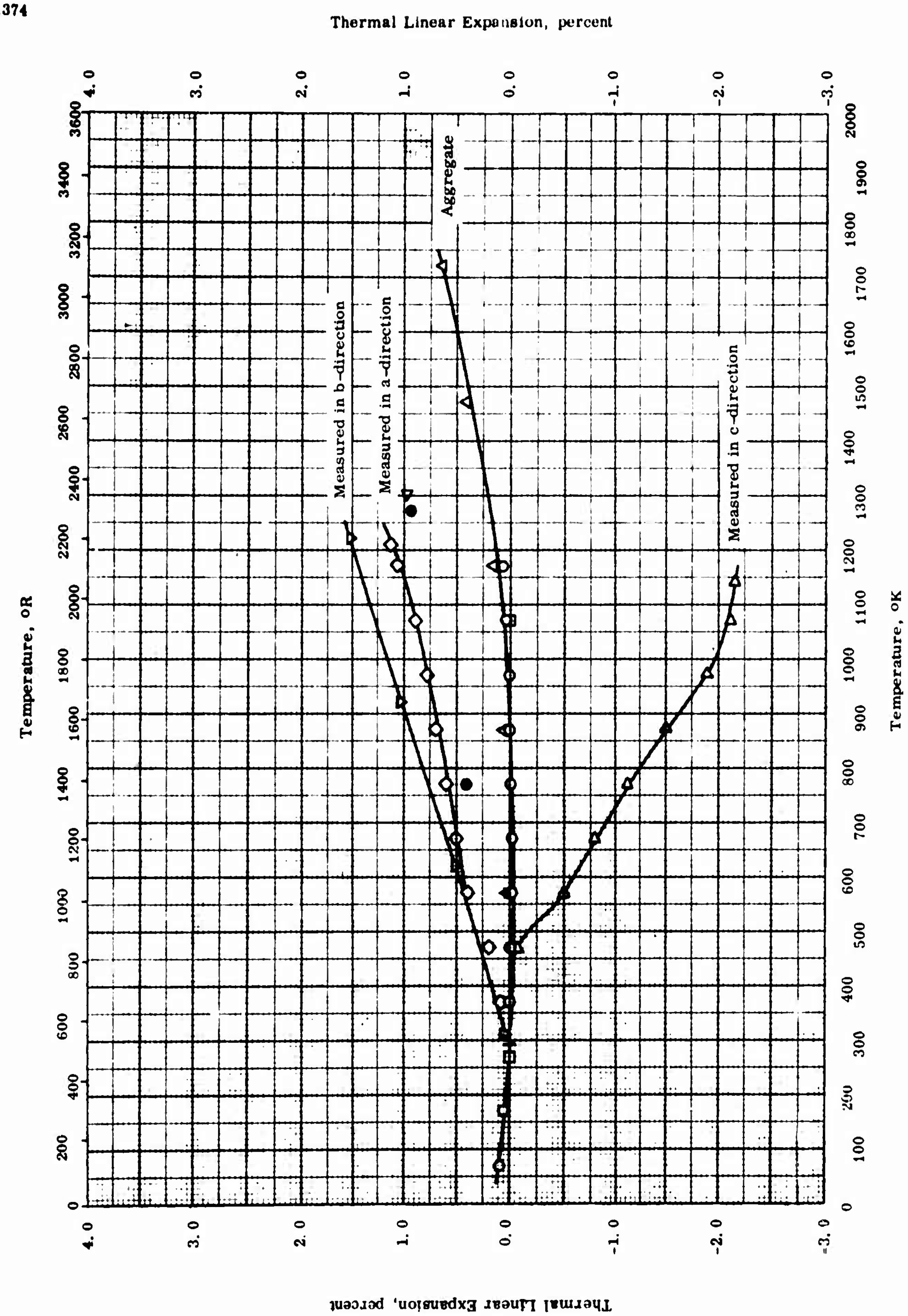


THERMAL CONDUCTIVITY -- ALUMINUM TITANATE

THERMAL CONDUCTIVITY -- ALUMINUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	52-3	773		$Al_2O_3 \cdot TiO_2$	



THERMAL LINEAR EXPANSION -- ALUMINUM TITANATE

THERMAL LINEAR EXPANSION -- ALUMINUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
●	60-35	298-1273		$Al_2O_3 \cdot TiO_2$.	
○	50-15	73-1173		$Al_2O_3 \cdot TiO_2$; 56.1 Al_2O_3 and 43.9 TiO_2.	Equimolar mix of Al_2O_3 and TiO_2 ball-milled, dried at 110 C, 5% wax added as binder, pressed at 10,000 psi, fired to 650 C in 8 hrs to remove binder, then to 1820 C in 26 hrs, held 1 hr, furnace cooled to room temperature, crushed, ground to 6 μ, dried, pressed, fired to 1700 C in 29 hrs, and held 1 hr.
□	53-30	273-1073		$Al_2O_3 \cdot TiO_2$.	Fired at 1600 C.
△	56-28	573-1723		$Al_2O_3 \cdot TiO_2$; fine grain.	
◇	52-3	298-1213		Aluminum titanate body; porosity 18%; orthorombic structure from x-ray photographs.	Dry pressed and held 5 hrs at 1400 C; measured in a-direction.
▽	52-3	293-1223		Same as above.	Same as above except measured in b-direction.
▷	52-3	303-1243		Same as above.	Same as above except measured in c-direction.
◁	52-3	303-1305		Same as above.	Same as above except random oriented.

PROPERTIES OF BARIUM TITANATES

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Melting Point	1893*	3408*

*For $BaO \cdot TiO_2$ only.

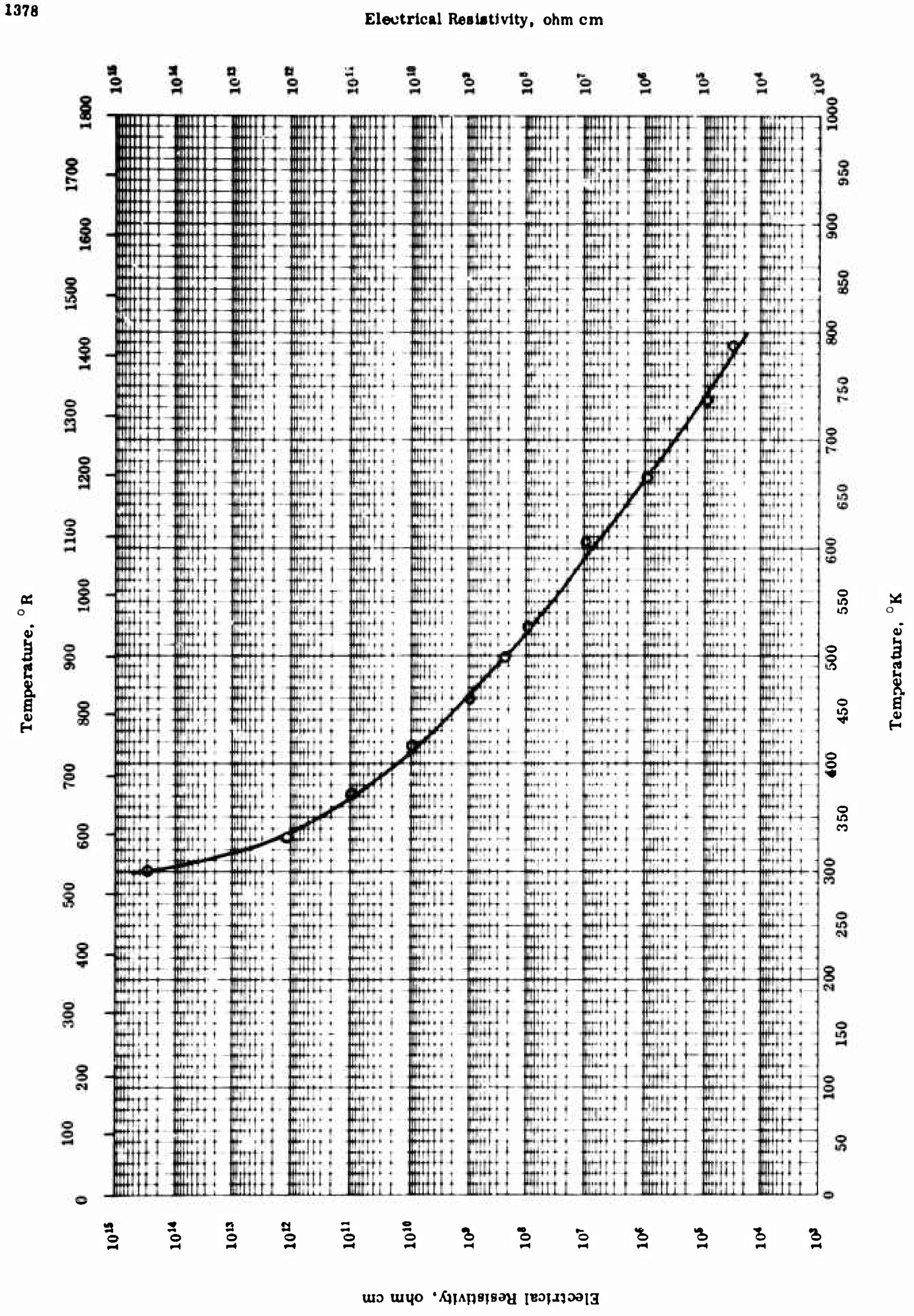
REPORTED VALUES

Melting Point	K	R
○ $BaO \cdot TiO_2$	1873*	3372*
□ $BaO \cdot TiO_2$	1891	3404
△ $BaO \cdot TiO_2$	1885	3394
◇ $BaO \cdot TiO_2$	1893	3408
▽ $2\ BaO \cdot TiO_2$	2133	3839

PROPERTIES OF BARIUM TITANATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-20	1873		99.6 $BaO \cdot TiO_2$ and 0.4 $SrO \cdot TiO_2$.	
□	55-25	1891		$BaO \cdot TiO_2$.	
△	55-26	1886		$BaO \cdot TiO_2$; prepared by c.p. grade $BaCO_3$ and TiO_2.	Mixed and sintered for 24 hrs at about 100 C below solidus.
◇	55-26	1893		Same as above.	Same as above.
▽	55-26	2133		2 $BaO \cdot TiO_2$, barium orthotitanate; prepared same as above.	Same as above.

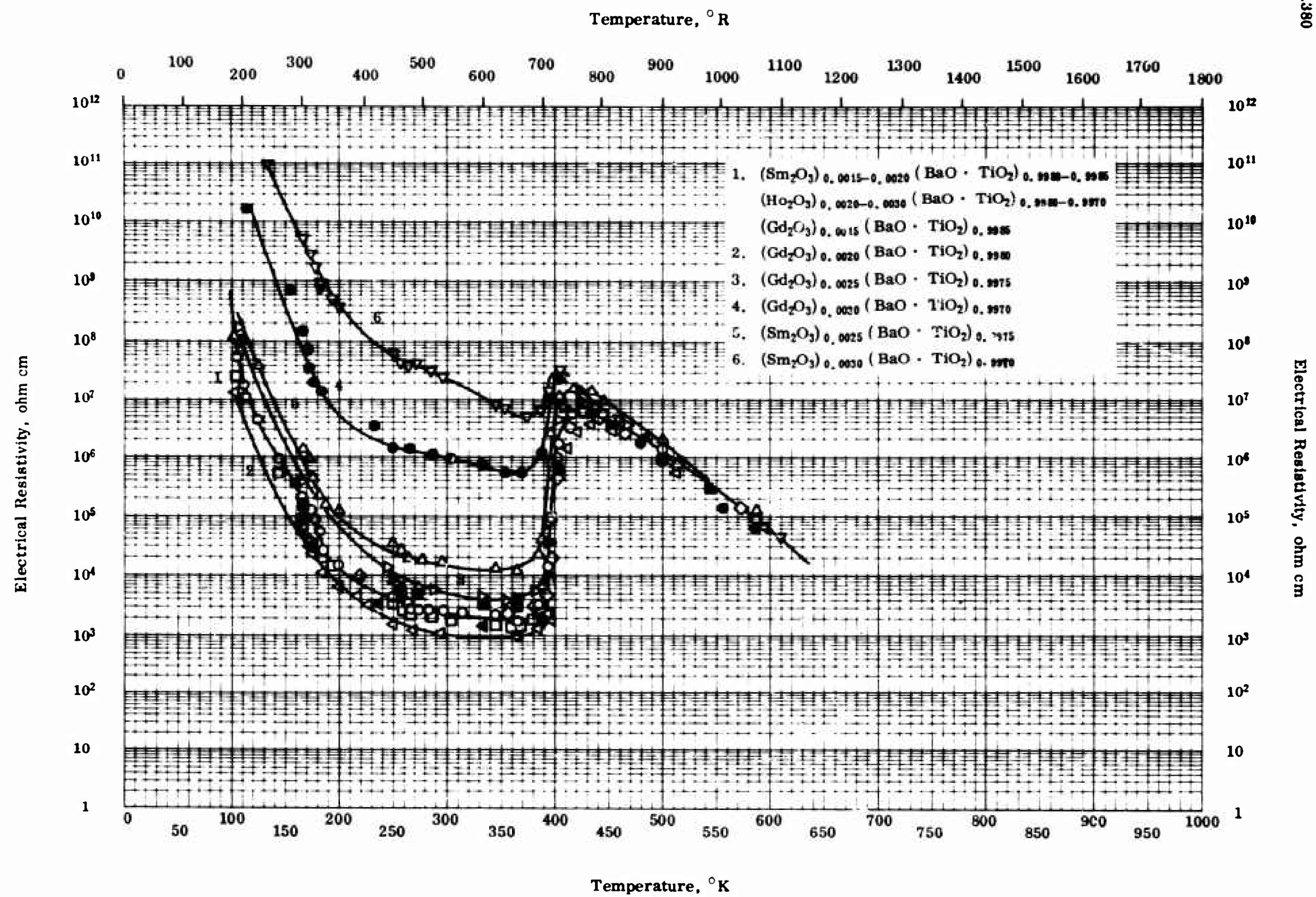


ELECTRICAL RESISTIVITY -- BARIUM TITANATE

ELECTRICAL RESISTIVITY -- BARIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	56-15	301-789		$BaO \cdot TiO_2$.	Temp. controlled to ≤ 0.1 C.

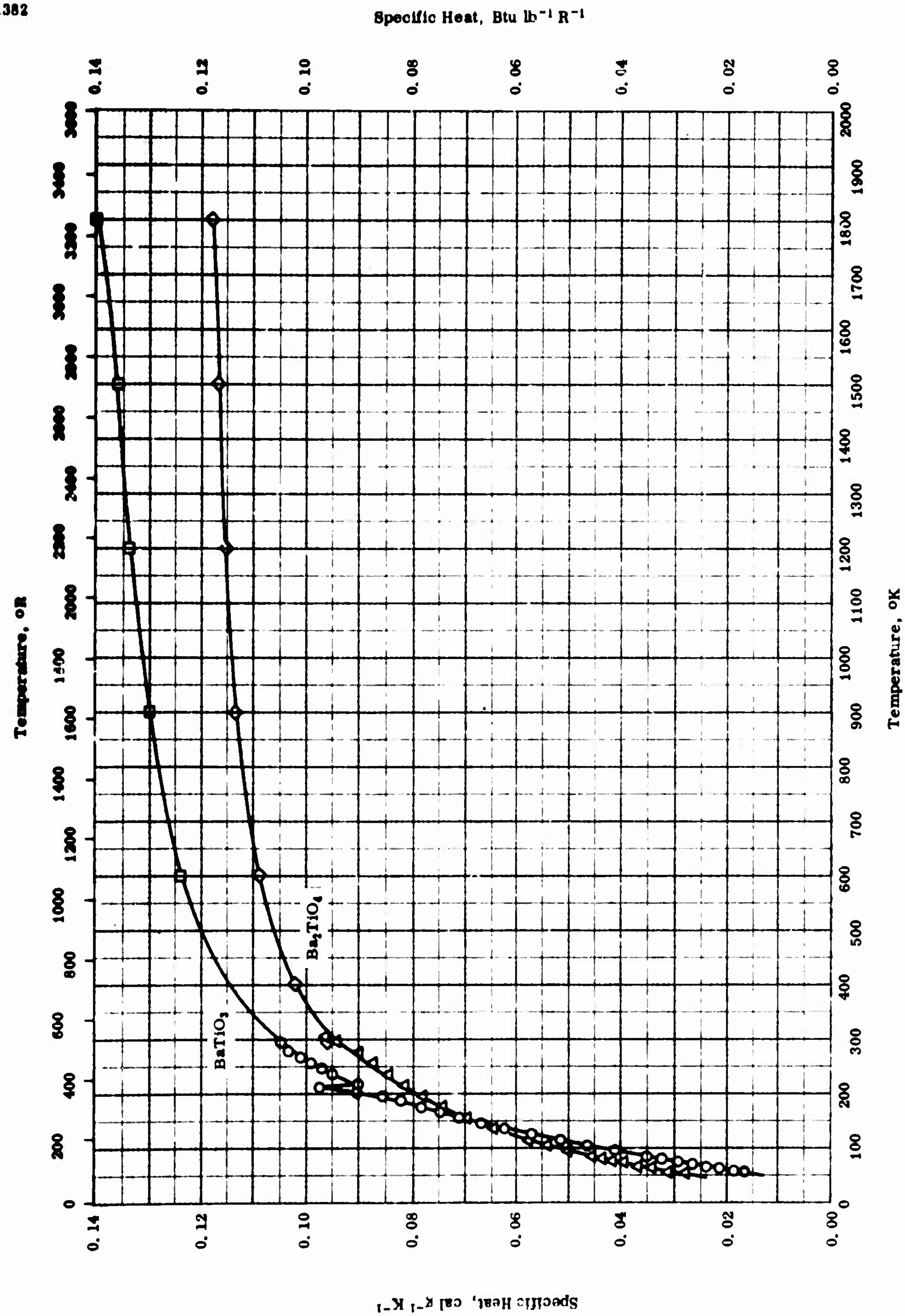


ELECTRICAL RESISTIVITY -- BARIUM TITANATE
(Other rare earth oxides - doped)

ELECTRICAL RESISTIVITY -- BARIUM TITANATE
(Other rare earth oxides - doped)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-21	104-588	± 5	$(Sm_2O_3)_{0.0015}(BaO \cdot TiO_2)_{0.9985}$; prepared from $BaO \cdot TiO_2$ (0.2586 Sr, 0.0358 Ca, 0.0148 Zr, 0.0106 Al, etc.) of Titanium Alloy Mfg Div. of National Lead Co., and 99.9 pure rare earth oxide from Lindsey Chem. Div. of Am. Potash and Chem. Corp.	Calcined and sintered.
□	61-21	104-588	± 5	$(Sm_2O_3)_{0.0020}(BaO \cdot TiO_2)_{0.9980}$; same as above.	Same as above.
△	61-21	111-588	± 5	$(Sm_2O_3)_{0.0025}(BaO \cdot TiO_2)_{0.9975}$; same as above.	Same as above.
▽	61-21	133-610	± 5	$(Sm_2O_3)_{0.0030}(BaO \cdot TiO_2)_{0.9970}$; same as above.	Same as above.
◇	61-21	103-582	± 5	$(Gd_2O_3)_{0.0015}(BaO \cdot TiO_2)_{0.9985}$; same as above.	Same as above.
◁	61-21	104-595	± 5	$(Gd_2O_3)_{0.0020}(BaO \cdot TiO_2)_{0.9980}$; same as above.	Same as above.
▷	61-21	107-589	± 5	$(Gd_2O_3)_{0.0025}(BaO \cdot TiO_2)_{0.9975}$; same as above.	Same as above.
●	61-21	114-588	± 5	$(Gd_2O_3)_{0.0030}(BaO \cdot TiO_2)_{0.9970}$; same as above.	Same as above.
■	61-21	104-589	± 5	$(Ho_2O_3)_{0.0020}(BaO \cdot TiO_2)_{0.9980}$; same as above.	Same as above.
◀	61-21	103-588	± 5	$(Ho_3O_3)_{0.0025}(BaO \cdot TiO_2)_{0.9975}$; same as above.	Same as above.
▶	61-21	110-577	± 5	$(Ho_2O_3)_{0.0030}(BaO \cdot TiO_2)_{0.9970}$; same as above.	Same as above.

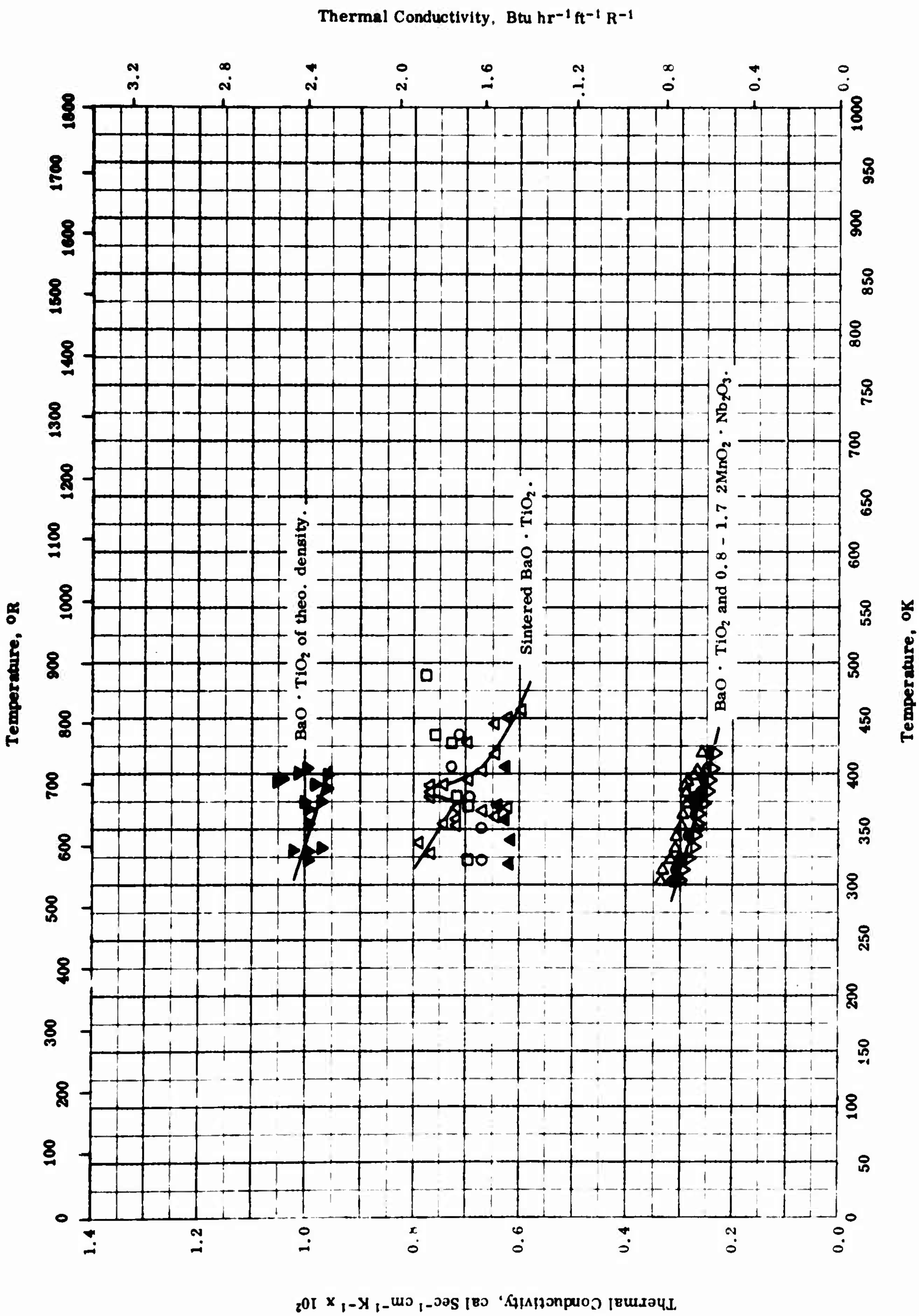


SPECIFIC HEAT -- BARIUM TITANATES

SPECIFIC HEAT -- BARIUM TITANATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-18	53-298		99.7 $BaO \cdot TiO_2$.	Prepared from reagent grade barium hydroxide, and titania by prolonged heating at 1350 C.
□	53-31	278-1800		Same as above.	
△	52-19	54-298		Ba_2TiO_4 ($2BaO \cdot TiO_2$); 99.2 Ba_2TiO_4, 0.34 CaO, and 0.02 SiO_2.	
◇	53-31	298-1800		Ba_2TiO_4 ($2BaO \cdot TiO_2$); same as above.	

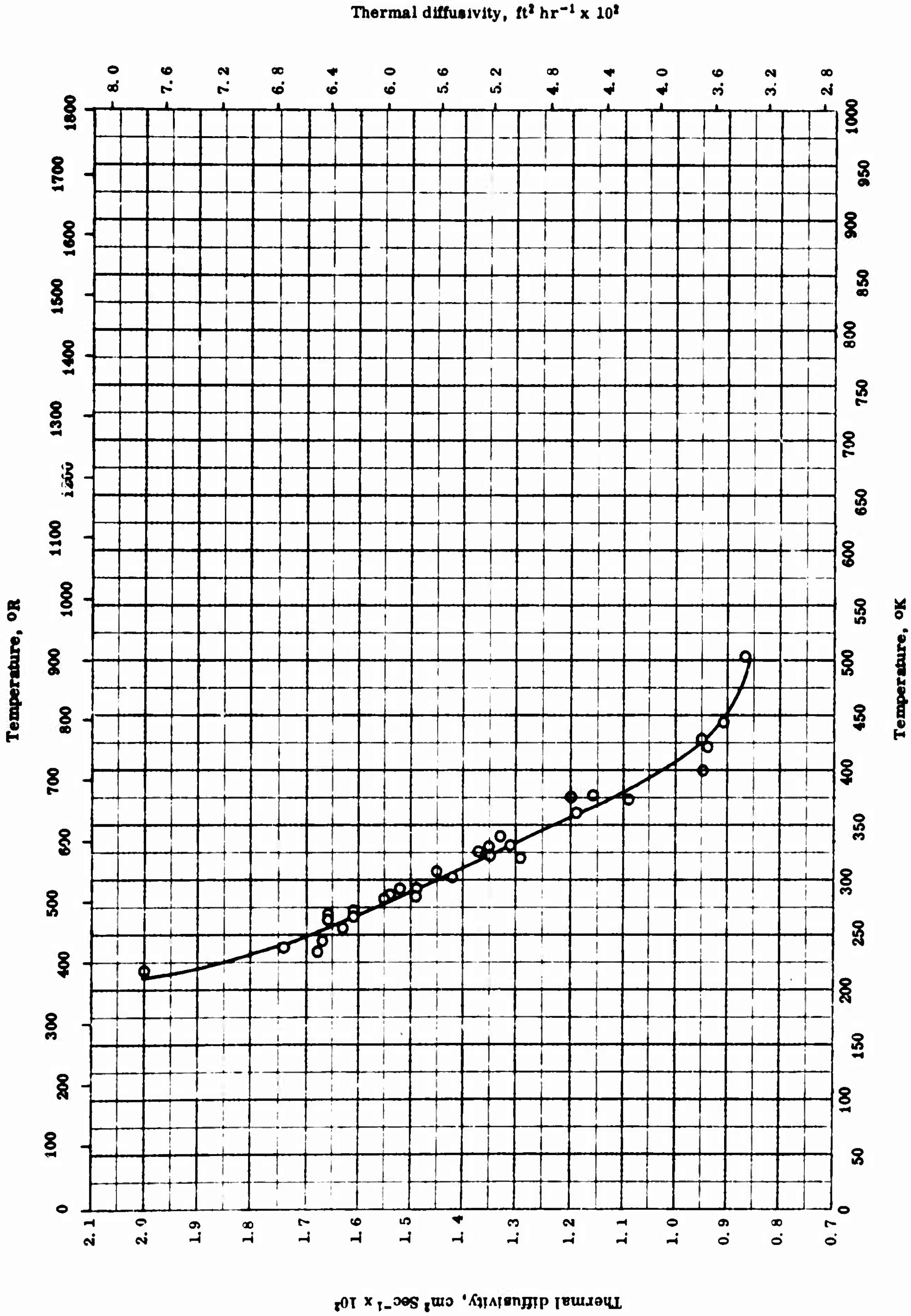


THERMAL CONDUCTIVITY -- BARIUM TITANATE

THERMAL CONDUCTIVITY -- BARIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-3	322-500		$BaO \cdot TiO_2$.	
□	53-3	322-500		$BaO \cdot TiO_2$.	
▲	54-8	318-406		$BaO \cdot TiO_2$.	
▷	61-2	303-418		Pure $BaO \cdot TiO_2$.	
△	58-4	323-458		$BaO \cdot TiO_2$.	Sintered from $BaCO_3$ and TiO_2 powders of the special reagent grade.
▼	63-4	323-405	< 10	$BaO \cdot TiO_2$; disks with density 5.9 g cm^{-3}.	Surfaces of disks lapped parallel.
●	61-2	303-418		$BaO \cdot TiO_2$ and 0.869 $2MnO_2 \cdot Nb_2O_3$.	Corresponding to 0.5 mole % of $2MnO_2 \cdot Nb_2O_3$.
▽	61-2	303-418		$BaO \cdot TiO_2$ and 1.73 $2MnO_2 \cdot Nb_2O_3$.	Corresponding to 1.0 mole % of $2MnO_2 \cdot Nb_2O_3$.

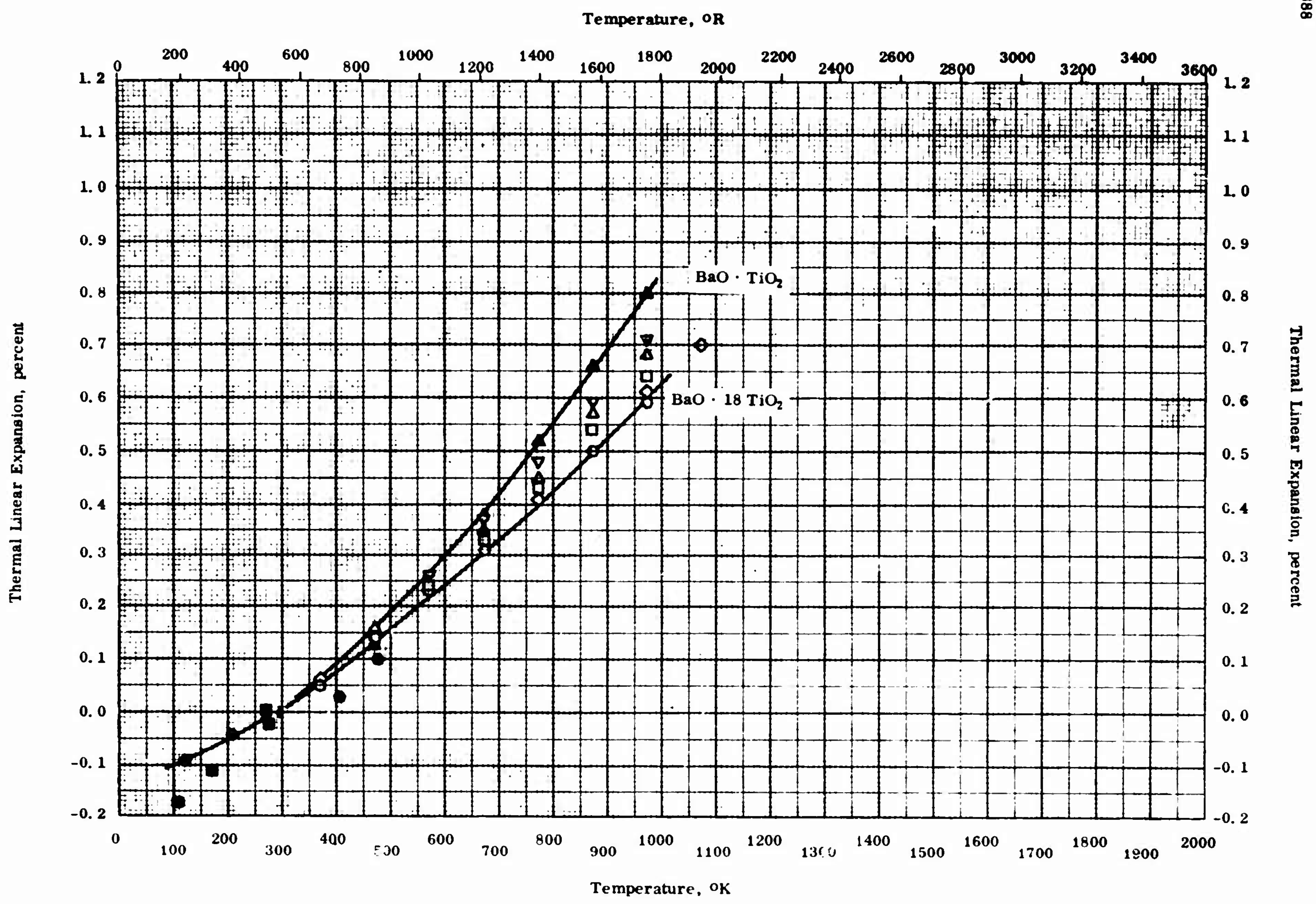


THERMAL DIFFUSIVITY -- BARIUM TITANATE

THERMAL DIFFUSIVITY -- BARIUM TITANATE

REFERENCE INFORMATION

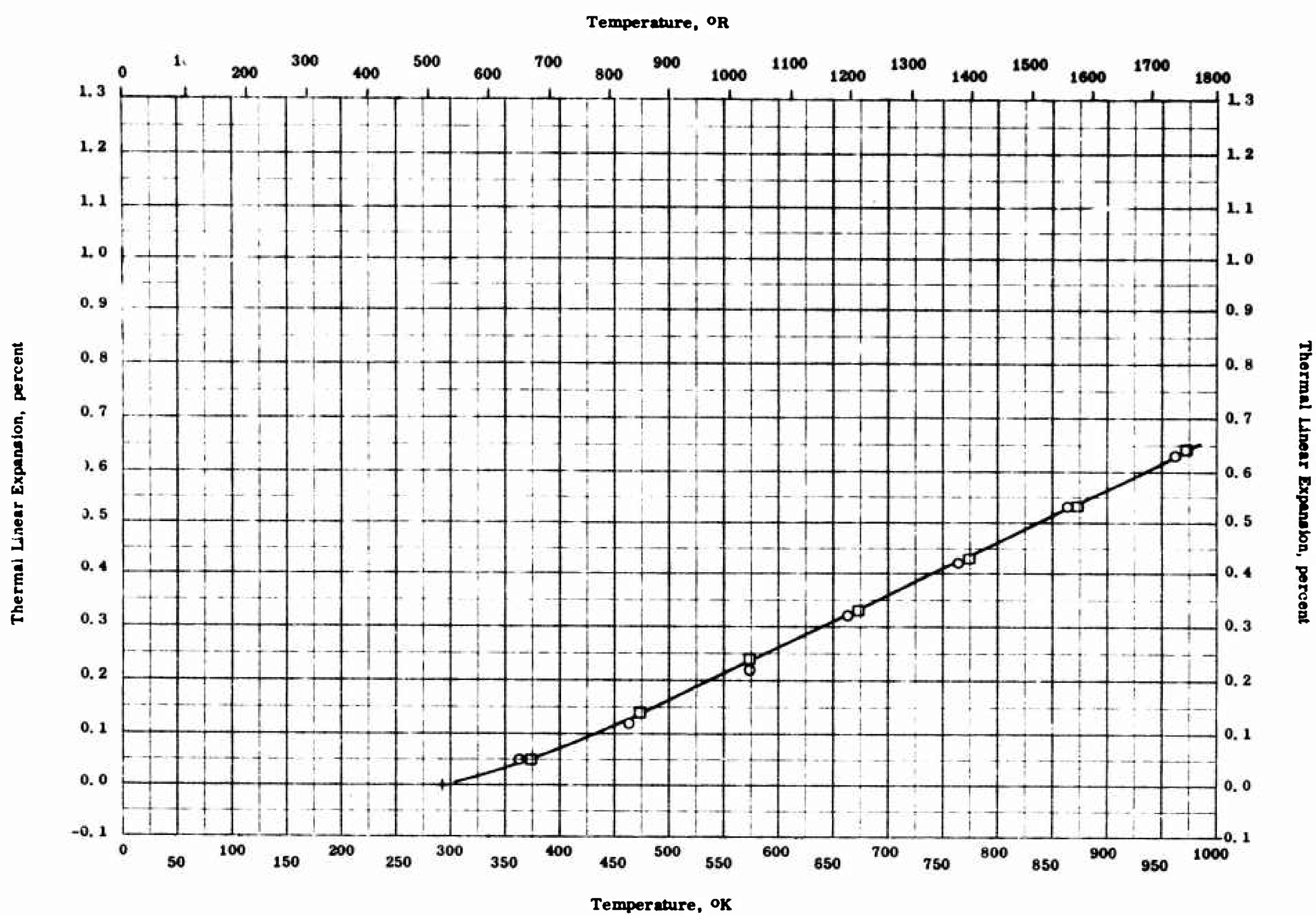
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	63-4	216-503	±10	Sample in cylindrical form of 3/4 in. dia and 1 in. long; density 5.9 $g cm^{-3}$, dielectric constant 1800, polarization pr 7.13 μ coul. cm^{-2}, and coercive field 2.0 kv cm^{-1}.	



THERMAL LINEAR EXPANSION -- BARIUM TITANATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	47-6	293-973		$BaO \cdot 18TiO_2$; 90.4 TiO_2 and 9.6 BaO.	Heated to 1100 C for 12 hrs and matured at 1250 to 1430 C for 6 hrs.
□	47-6	293-973		$BaO \cdot 6TiO_2$; 75.7 TiO_2 and 24.3 BaO.	Same as above.
△	47-6	293-973		$BaO \cdot 5TiO_2$; 72.3 TiO_2 and 27.7 BaO.	Same as above.
◇	47-6	293-973		$BaO \cdot 4TiO_2$; 67.6 TiO_2 and 32.4 BaO.	Same as above.
▽	47-6	293-973		$BaO \cdot 3TiO_2$; 61.0 TiO_2 and 39.0 BaO.	Same as above.
▲	47-6	293-973		$BaO \cdot TiO_2$; 65.7 BaO and 34.3 TiO_2.	Same as above.
●	51-26	122-478		$BaTiO_3$; prepared from 99.2 TiO_2 and 99.6 $BaCO_3$.	Calcined and sintered at 1400 C; author reports transformations at -77 C, 16 C, and 125 C.
■	51-27	113-278		$BaO \cdot TiO_2$ ($BaTiO_3$).	Author reports transformations at -100 C trigonal → orthorombic, at 4 C orthorombic → tetragonal, and a third transformation at 120 C; calculated from volume change computed from x-ray measurements of unit cell dimensions.

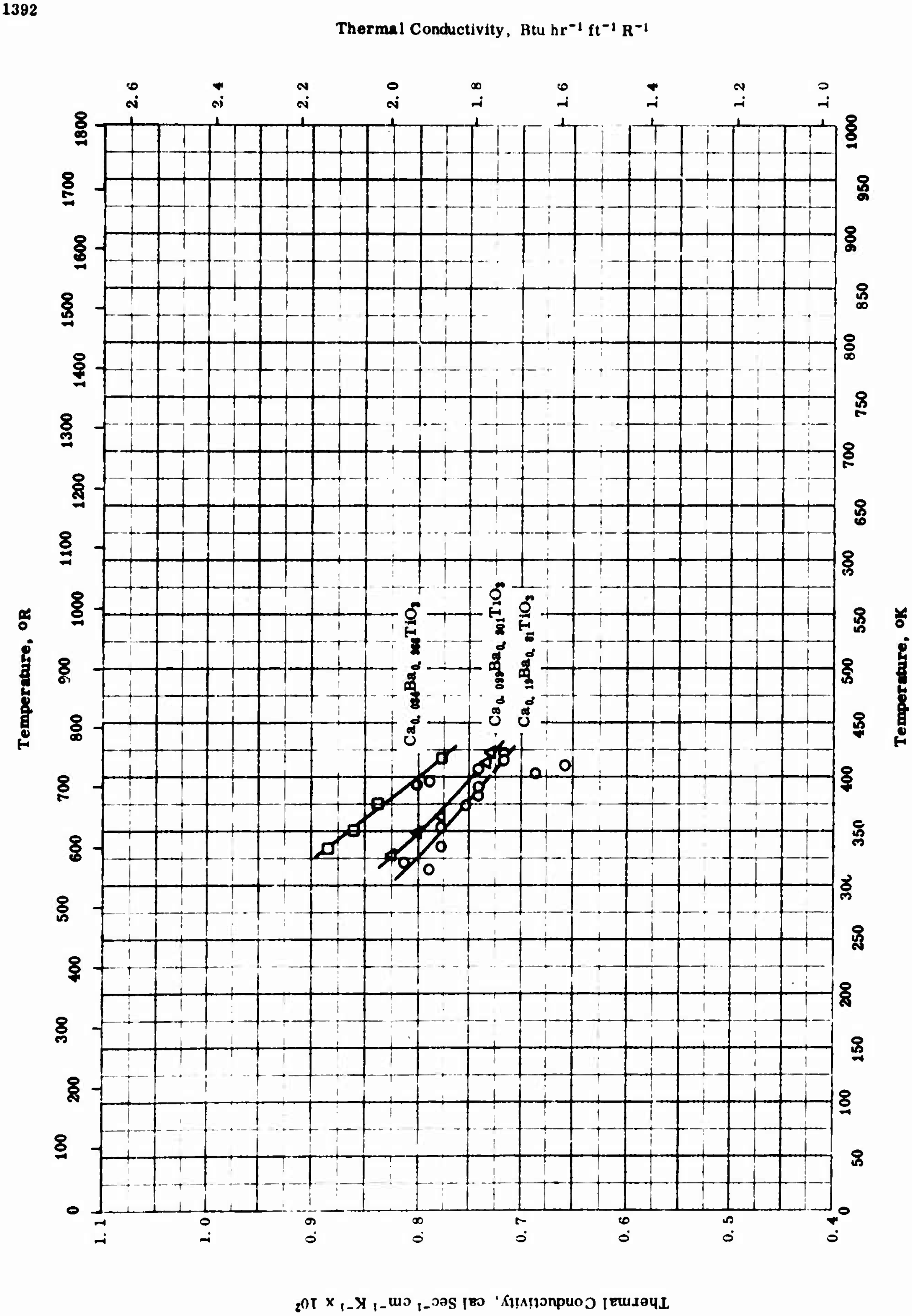


THERMAL LINEAR EXPANSION -- BARIUM BERYLLIUM TITANATE

THERMAL LINEAR EXPANSION -- BARIUM BERYLLIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	51-23	298-973		50 (BaO · 5 TiO_2) and 50 (5 BeO · 4 TiO_2).	
□	51-23	298-963		50 (BaO · TiO_2) and 50 (6 BeO · TiO_2).	

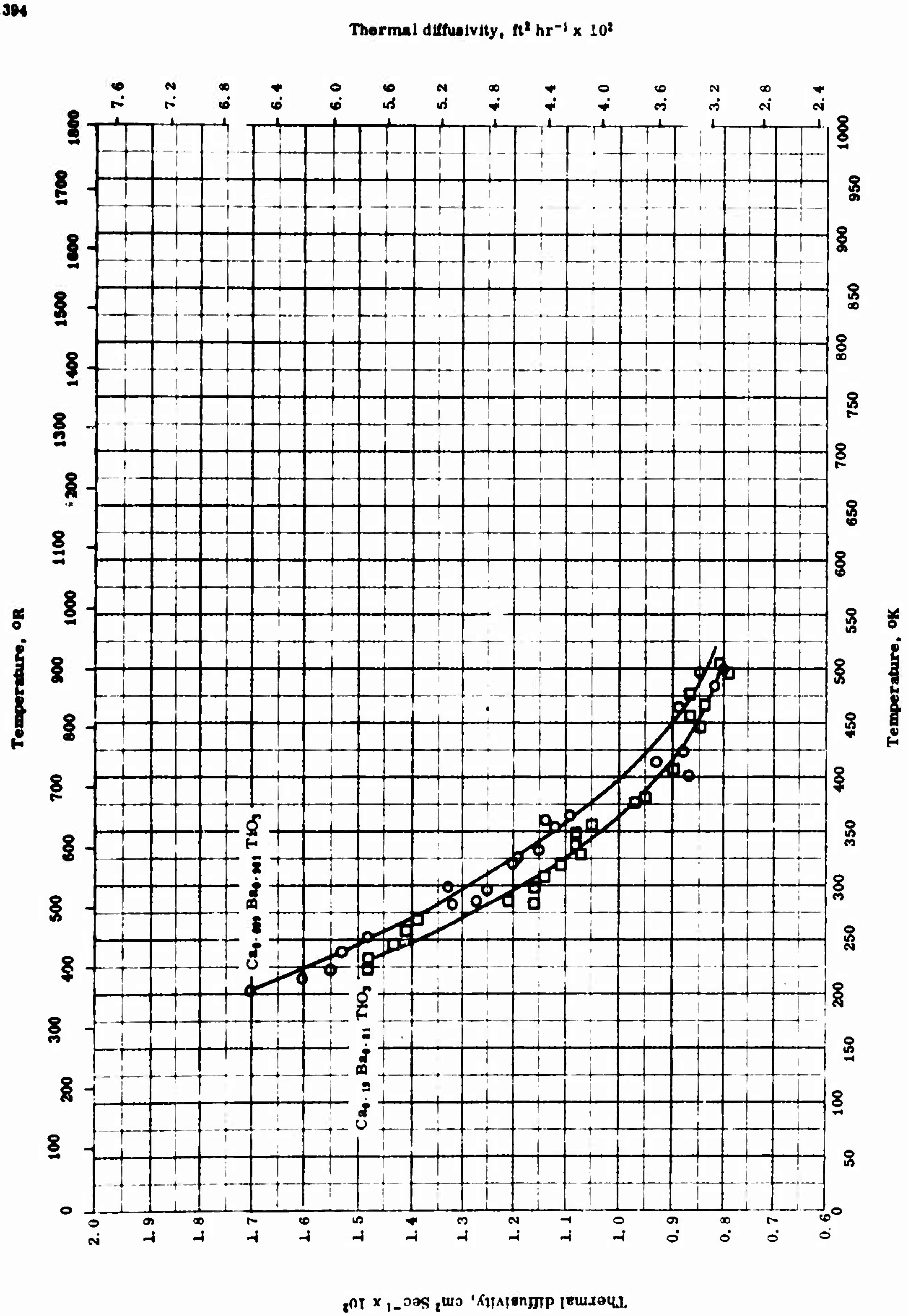


THERMAL CONDUCTIVITY -- BARIUM CALCIUM TITANATE

THERMAL CONDUCTIVITY -- BARIUM CALCIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	63-4	333-416	<10	$Ca_{0.034}Ba_{0.966}TiO_3$; density 5.8 g cm^{-3}.	Surfaces lapped.
△	63-4	328-428	<10	$Ca_{0.099}Ba_{0.901}TiC_3$; density 5.6 g cm^{-3}.	Surfaces lapped.
○	63-4	314-422	<10	$Ca_{0.19}Ba_{0.81}TiO_3$; density 5.28 g cm^{-3}.	Surfaces lapped.

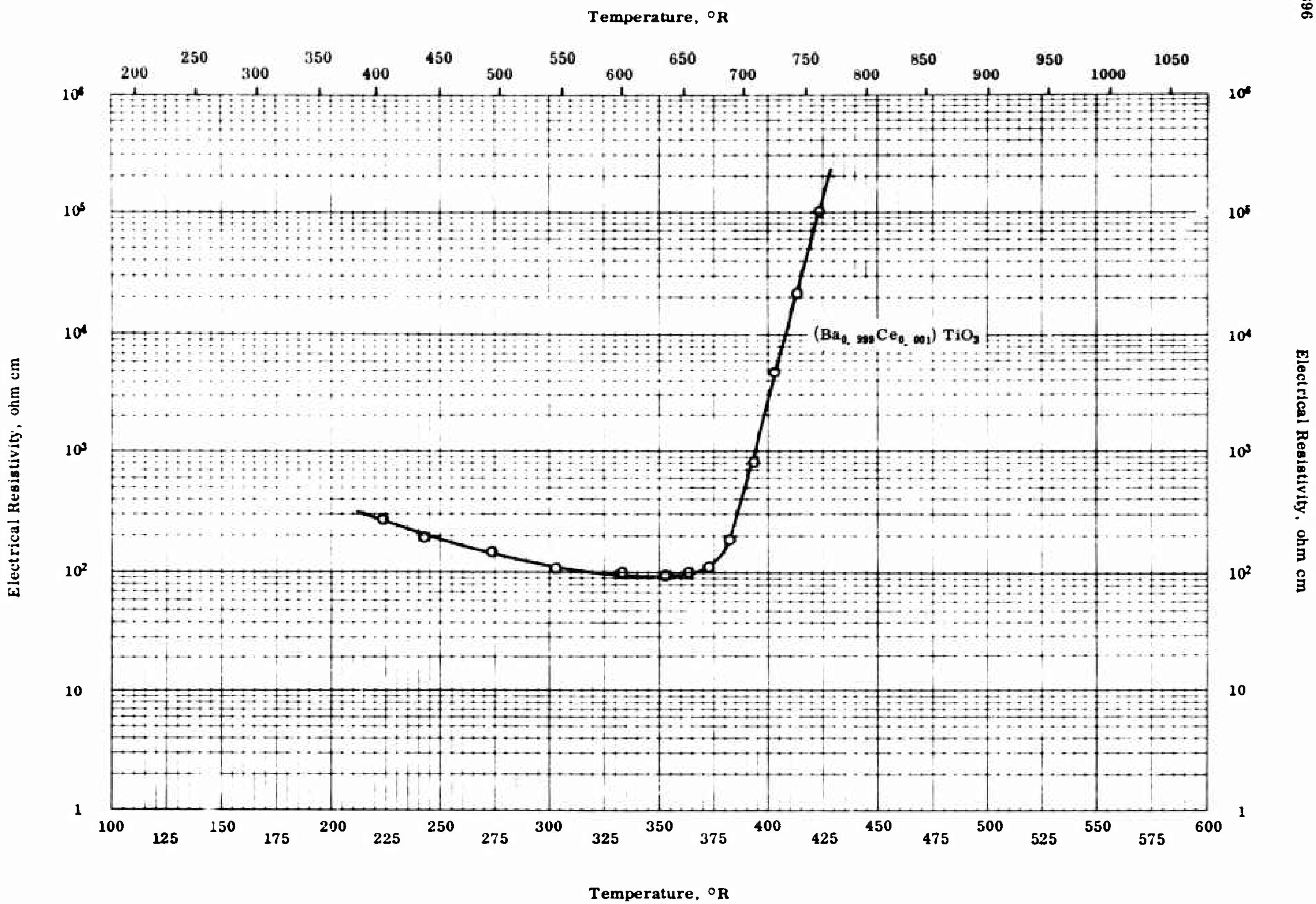


THERMAL DIFFUSIVITY -- BARIUM CALCIUM TITANATE

THERMAL DIFFUSIVITY -- BARIUM CALCIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-4	203-500	±10	$Ca_{0.099}$ $Ba_{0.901}$ TiO_3; sample 3/4 in. dia and 1 in. long with two 0.030 in. dia hole drilled perpendicular to the cylindrical axis; density 5.6 g cm^{-3}; dielectric constant 1500, polarization pr 8.2 μ coul. cm^{-2}, and coercive field 2.1 kv cm^{-1}.	End-lapped.
□	63-4	222-504	±10	$Ca_{0.19}$ $Ba_{0.81}$ TiO_3: same as above except density 5.28 g cm^{-3}, dielectric constant 1300, polarization pr 5.3 μcoul. cm^{-2}, and coercive field 3.32 kv cm^{-1}.	Same as above

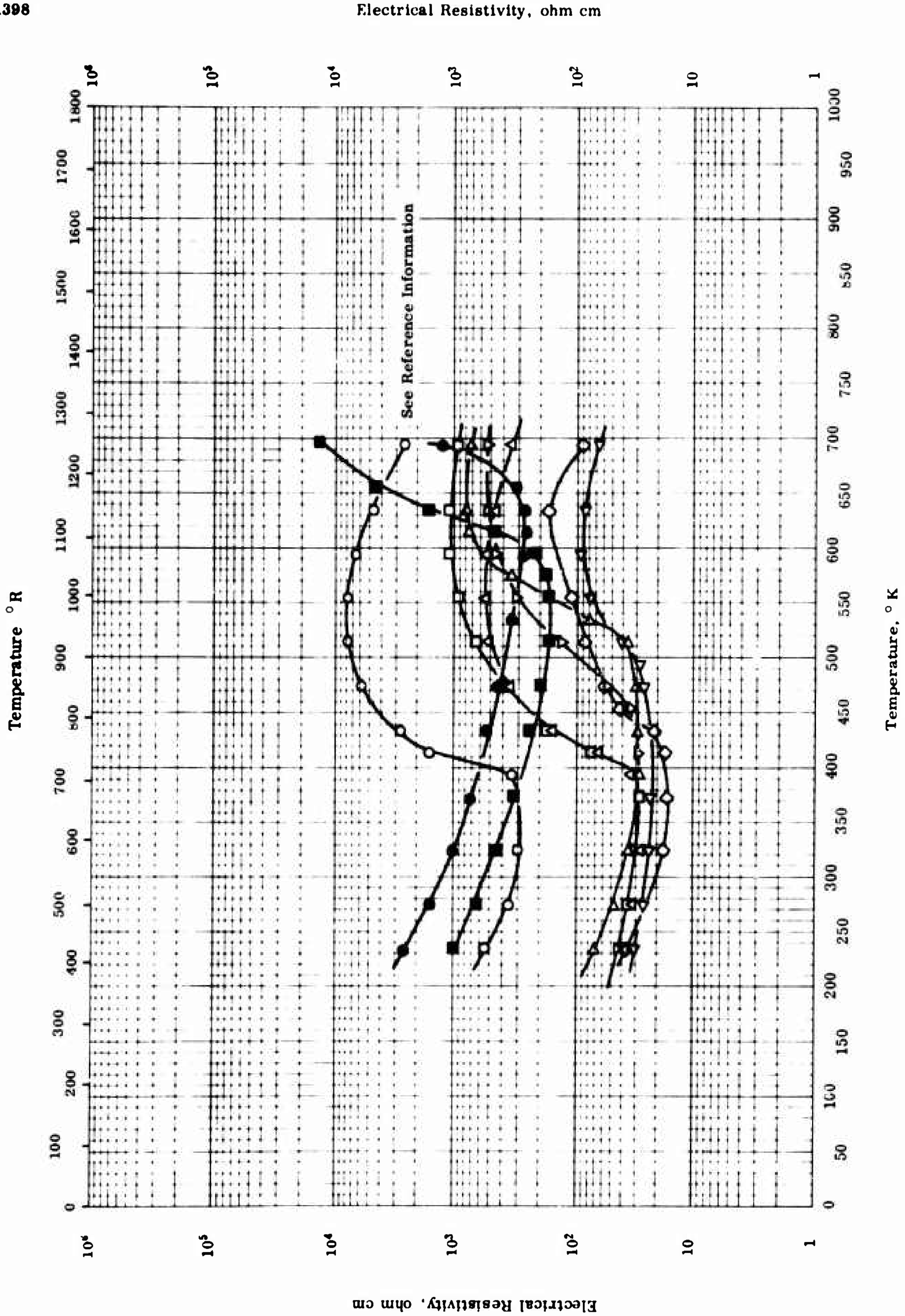


ELECTRICAL RESISTIVITY -- BARIUM CERIUM TITANATE

ELECTRICAL RESISTIVITY -- BARIUM CERIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	61-23	223-423		$(Ba_{0.999}Ce_{0.001})TiO_3$; prepared from barium titanyl oxalate, cerium oxalate, and titanium dioxide (all of 99.99 purity; grayish blue.)	Calcined calculated amount of raw material at 1000 C for 1 hr, crushed to 80 mesh, moistened and pressed with 600 $Kg\text{-}cm^{-2}$ to dis. ; 2 mm thick and 20 mm dia., fired at 1350-1400 C for 1-2 hrs; equivalent water absorption 2.62%.

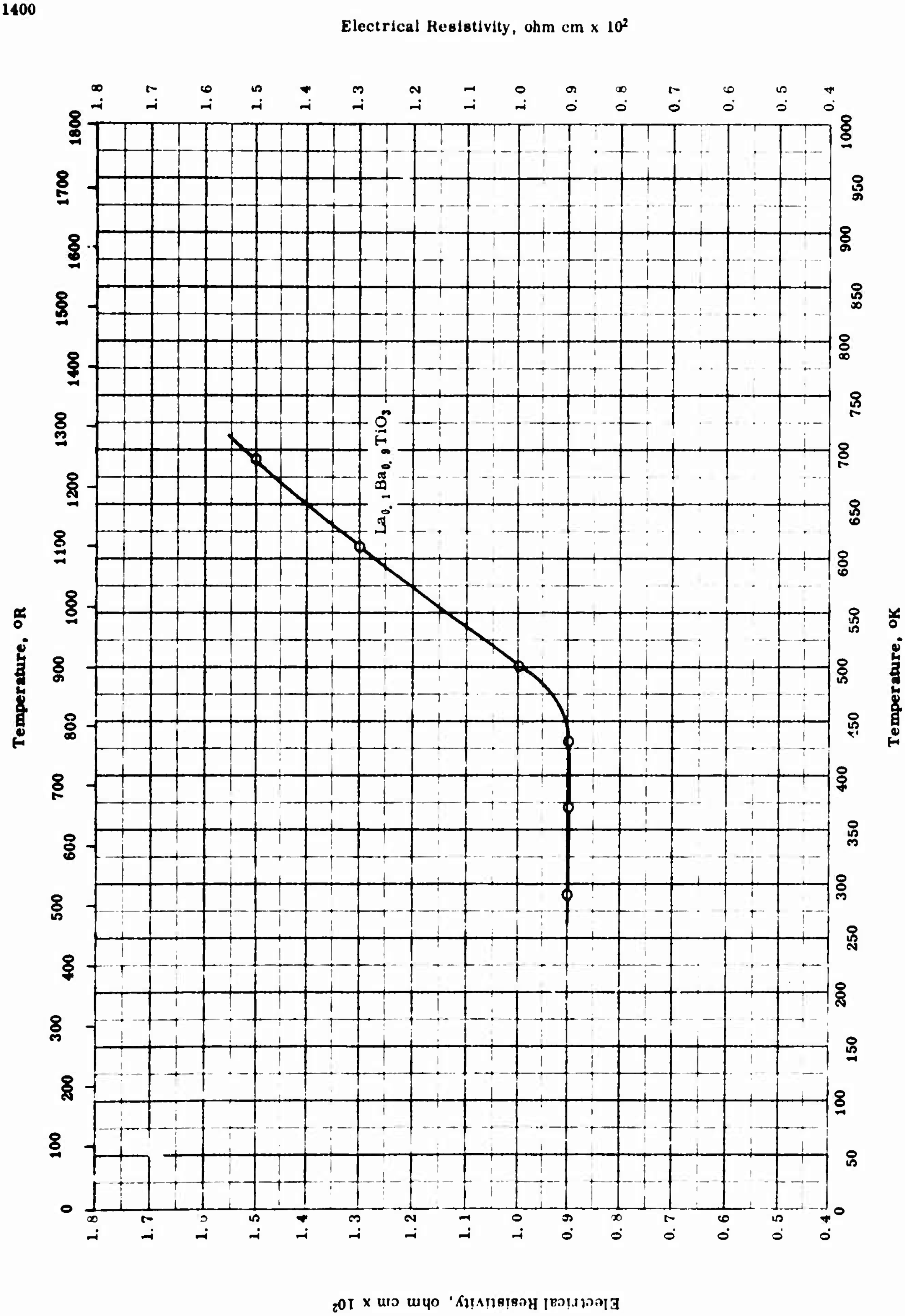


ELECTRICAL RESISTIVITY -- BARIUM CERIUM LEAD TITANATE

ELECTRICAL RESISTIVITY -- BARIUM CERIUM LEAD TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-23	233-693		$(Ba_{0.994}\ Pb_{0.005}\ Ce_{0.001})\ TiO_3$; prepared from barium titanyl oxalate, cerium oxalate, lead carbonate, and titanium dioxide (all 99.99 purity); color grayish blue.	Calcined stoichiometric amount of raw materials at 1000 C for 1 hr, crushed to 80 mesh, moistened and pressed with 600 kg - cm^{-2} to disks of 2 mm thick and 20 mm dia., fired at 1350-1400 C for 1-2 hrs; equivalent water absorption 0.94%.
□	61-23	233-693		$(Ba_{0.989}\ Pb_{0.010}\ Ce_{0.001})\ TiO_3$; same as above.	Same as above; equivalent water absorption 0.24%.
△	61-23	233-693		$(Ba_{0.979}\ Pb_{0.020}\ Ce_{0.001})\ TiO_3$; same as above.	Same as above; equivalent water absorption 0.54%.
◇	61-23	233-693		$(Ba_{0.949}\ Pb_{0.050}\ Ce_{0.001})\ TiO_3$. same as above.	Same as above; equivalent water absorption 0.70%.
▽	61-23	233-693		$(Ba_{0.899}\ Pb_{0.100}\ Ce_{0.001})\ TiO_3$; same as above.	Same as above; equivalent water absorption 1.43%.
◁	61-23	233-693		$(Ba_{0.799}\ Pb_{0.200}\ Ce_{0.001})\ TiO_3$; same as above.	Same as above; equivalent water absorption 1.92%.
▷	61-23	233-693		$(Ba_{0.699}\ Pb_{0.300}\ Ce_{0.001})\ TiO_3$; same as above.	Same as above; equivalent water absorption 4.58%.
■	61-23	233-693		$(Ba_{0.499}\ Pb_{0.500}\ Ce_{0.001})\ TiO_3$; same as above.	Same as above; equivalent water absorption 0%.
●	61-23	233-693		$(Ba_{0.399}\ Pb_{0.600}\ Ce_{0.001})\ TiO_3$; same as above.	Same as above; equivalent water absorption 0%.

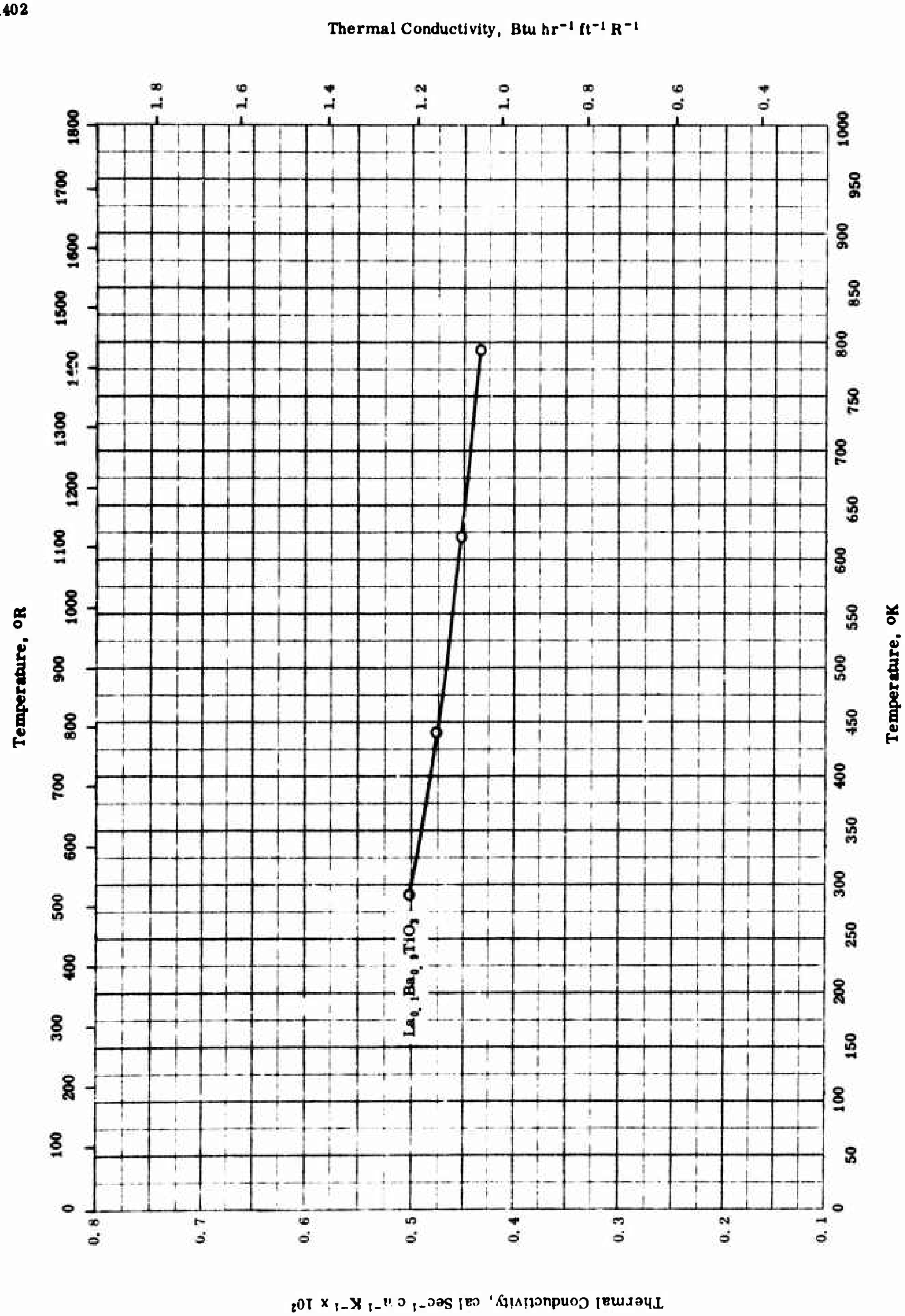


ELECTRICAL RESISTIVITY -- BARIUM LANTHANUM TITANATE

ELECTRICAL RESISTIVITY -- BARIUM LANTHANUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-3	290-690		$La_{0.1}Ba_{0.9}TiO_3$.	

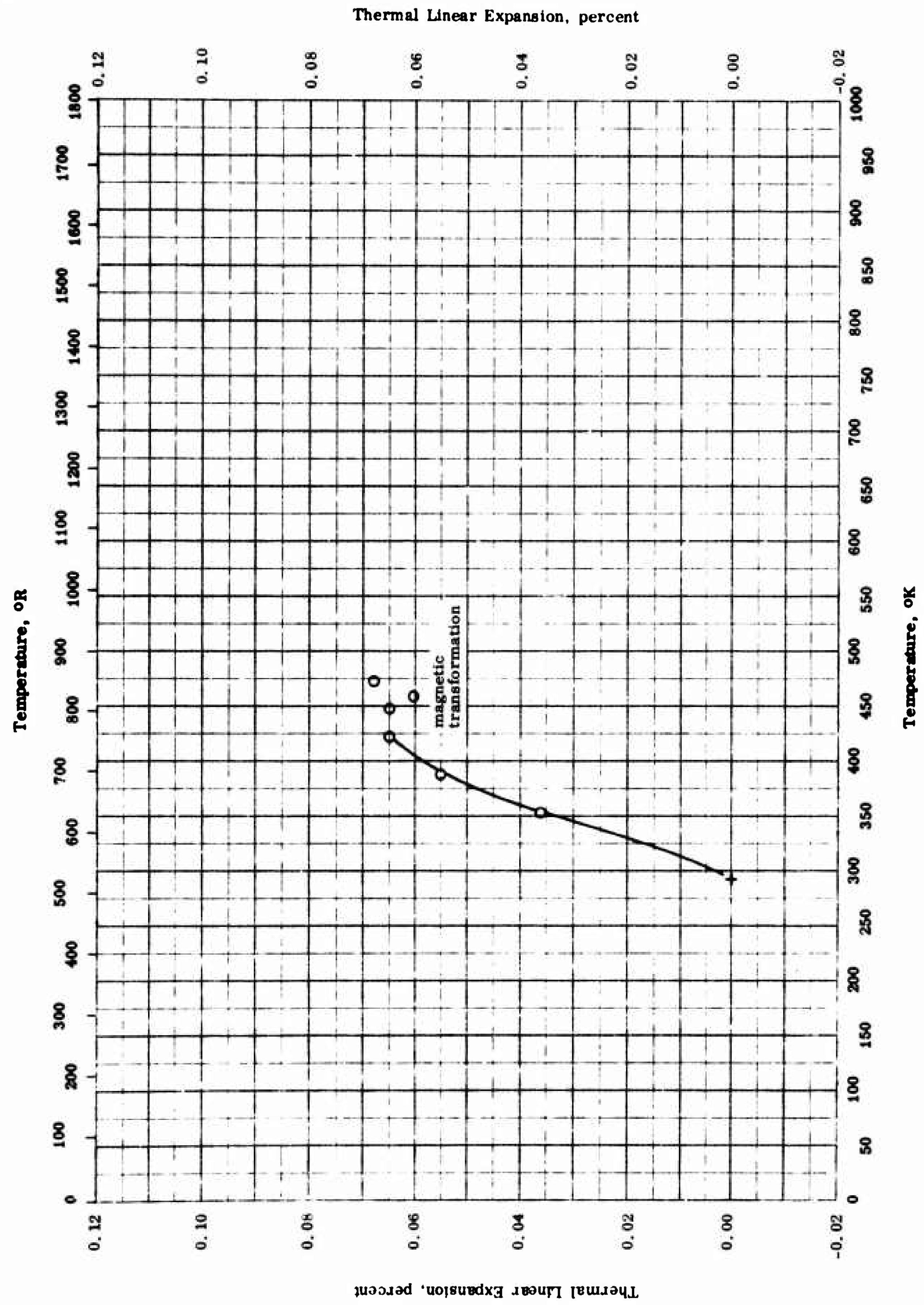


THERMAL CONDUCTIVITY -- BARIUM LANTHANUM TITANATE

THERMAL CONDUCTIVITY -- BARIUM LANTHANUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-3	290-793		$La_{0.1}Ba_{0.9}TiO_3$.	

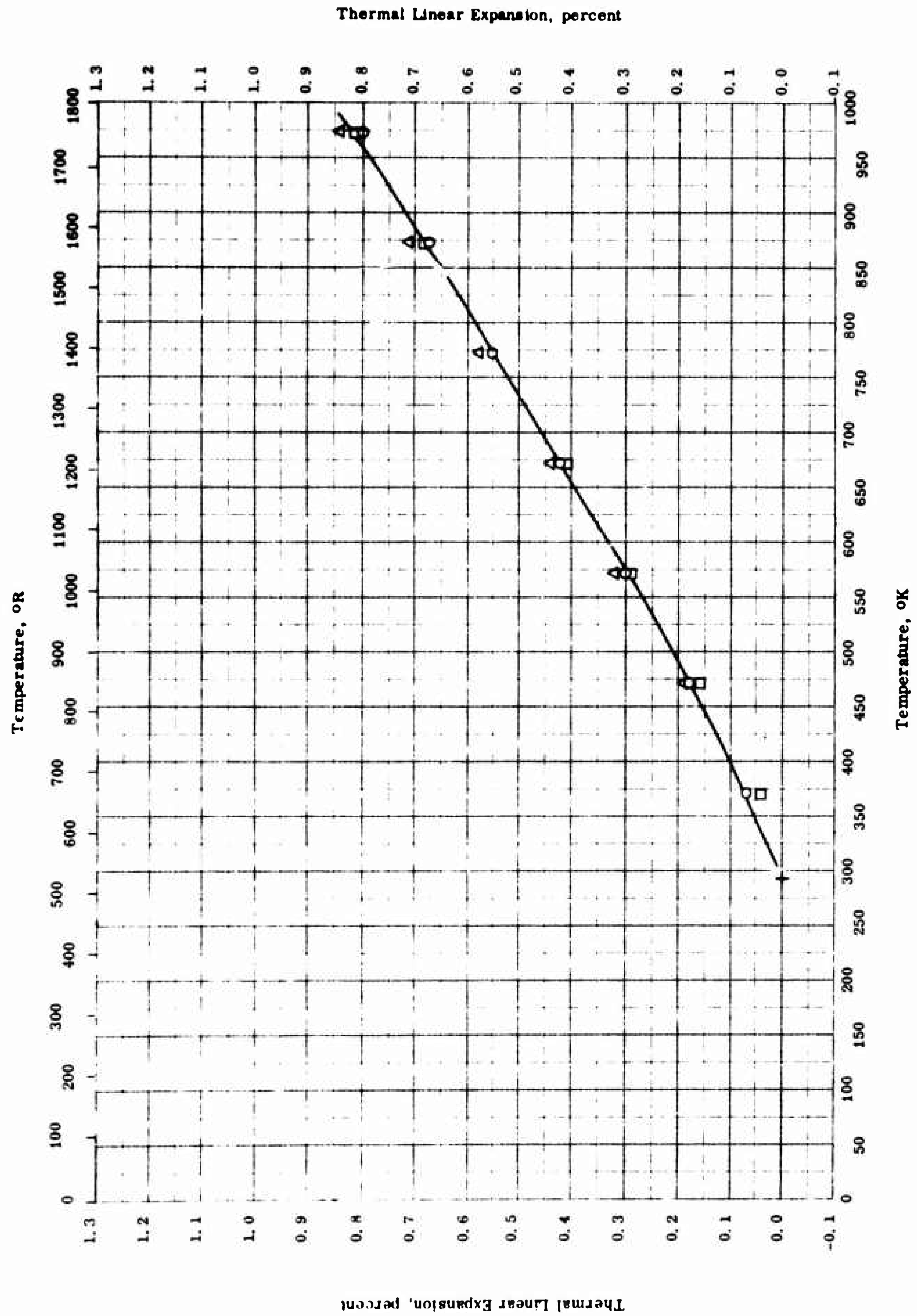


THERMAL LINEAR EXPANSION -- BARIUM LEAD TITANATE

THERMAL LINEAR EXPANSION -- BARIUM LEAD TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	51-18	293-473		80 Ba TiO_3 and 20 Pd TiO_3.	

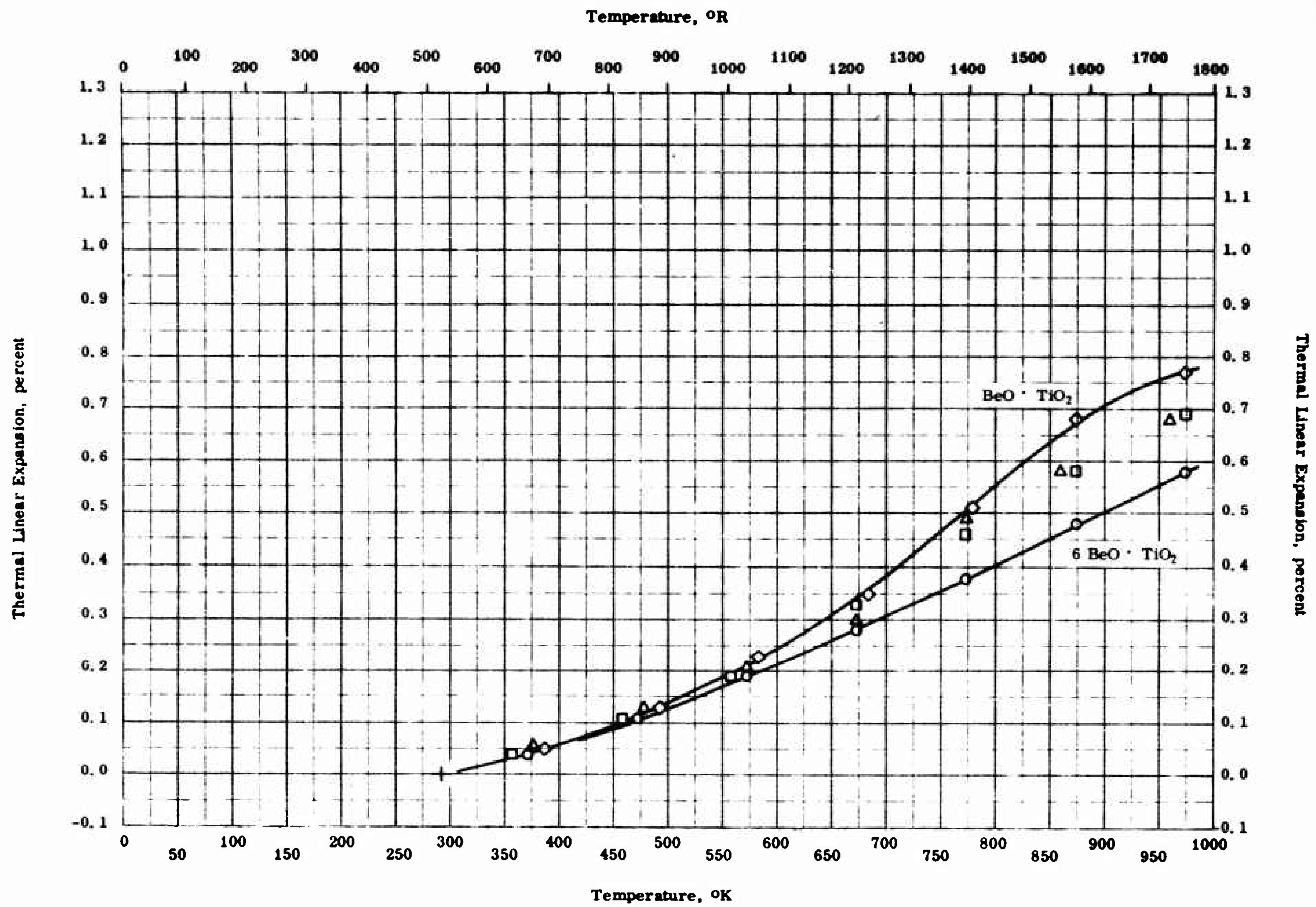


THERMAL LINEAR EXPANSION -- BARIUM STRONTIUM TITANATE

THERMAL LINEAR EXPANSION -- BARIUM STRONTIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	47-6	373-973		41.0 TiO_2, 35.0 SrO, and 23.7 BaO; prepared from 64.0 (SrO + TiO_2) and 36.0 (BaO + TiO_2).	Heated 12 hrs at 1100 C and matured 6 hrs at 1250 - 1430 C.
□	47-6	373-973		55.1 BaO, 35.8 TiO_2, and 9.1 SrO; prepared from 83.8 (BaO + TiO_2) and 16.2 (SrO + TiO_2).	Same as above.
△	47-6	373-973		46.7 BaO, 37.0 TiO_2, and 16.3 SrO; prepared from 71.0 (BaO + TiO_2) and 29.0 (SrO + TiO_2).	Same as above.



THERMAL LINEAR EXPANSION -- BERYLLIUM TITANATES

THERMAL LINEAR EXPANSION -- BERYLLIUM TITANATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	51-23	298-973		6 BeO · TiO_2; nominal composition 65.30 BeO and 34.70 TiO_2.	
□	51-23	298-973		4 BeO · TiO_2; nominal composition 55.65 BeO and 44.35 TiO_2.	
△	51-23	298-958		2 BeO · TiO_2; nominal composition 61.45 TiO_2 and 38.85 BeO.	
◇	51-23	298-973		BeO · TiO_2; nominal composition 76.12 TiO_2 and 23.88 BeO.	

PROPERTIES OF CALCIUM TITANATE

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density	4.10*	256*
Melting Point	2243	4038

*Handbook of Chemistry and Physics. (Ref. 64-16)

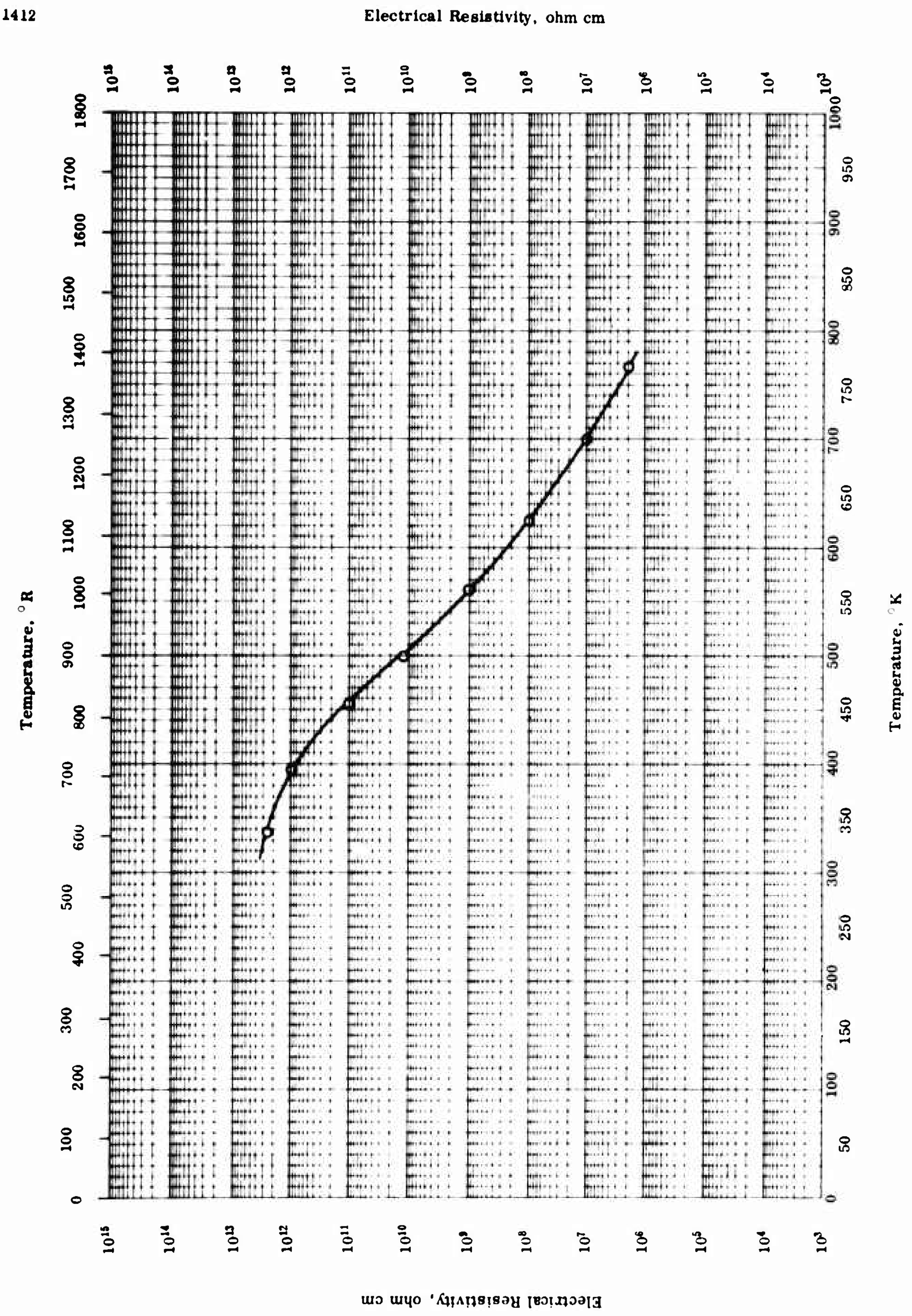
REPORTED VALUES

Melting Point		K	R
	O	2243	4038

PROPERTIES OF CALCIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	55-25	2243		$CaO \cdot TiO_2$.	

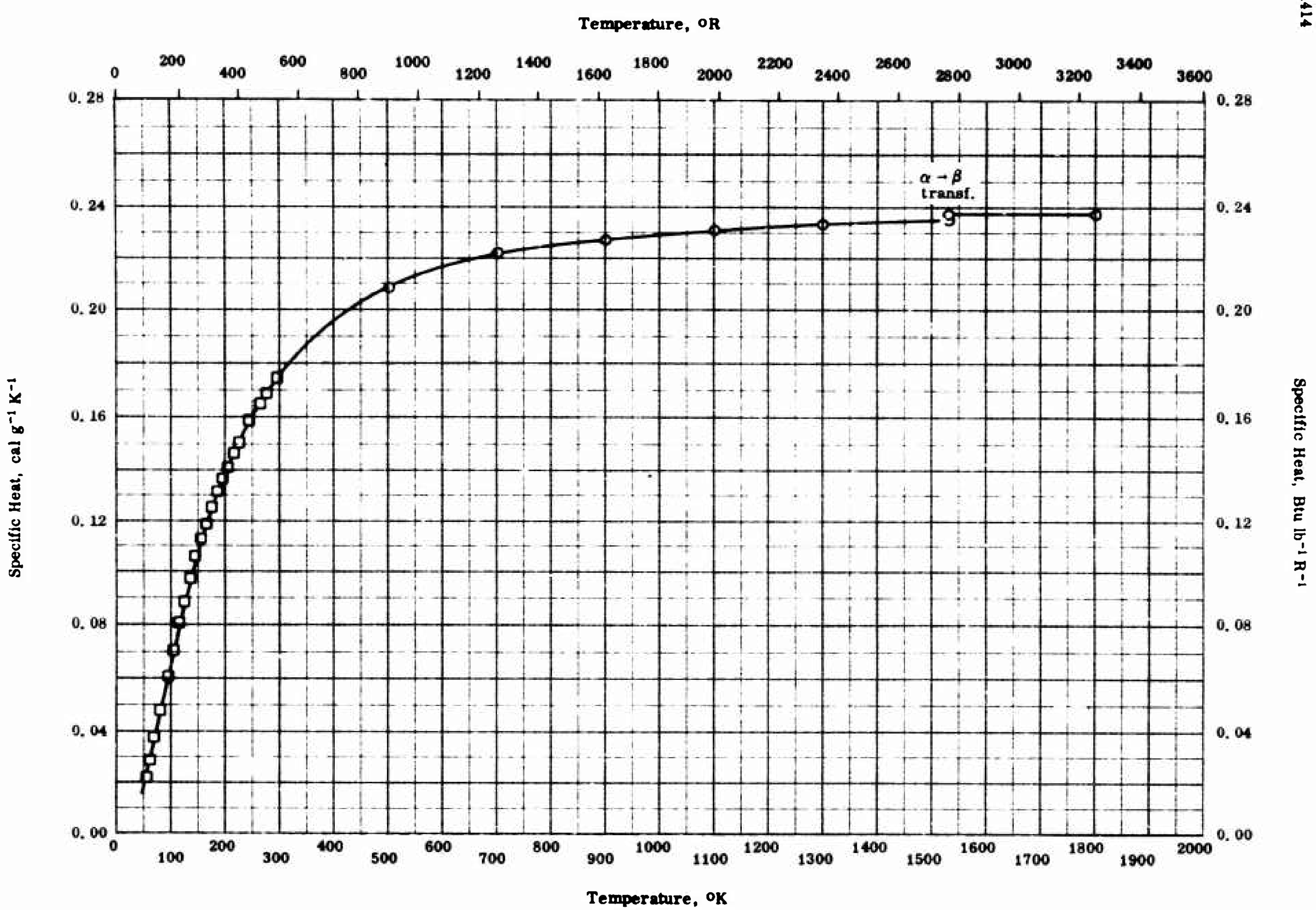


ELECTRICAL RESISTIVITY -- CALCIUM TITANATE

ELECTRICAL RESISTIVITY -- CALCIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	56-15	333-767		$CaO \cdot TiO_2$.	Temp. controlled to ≤ 0.1 C.

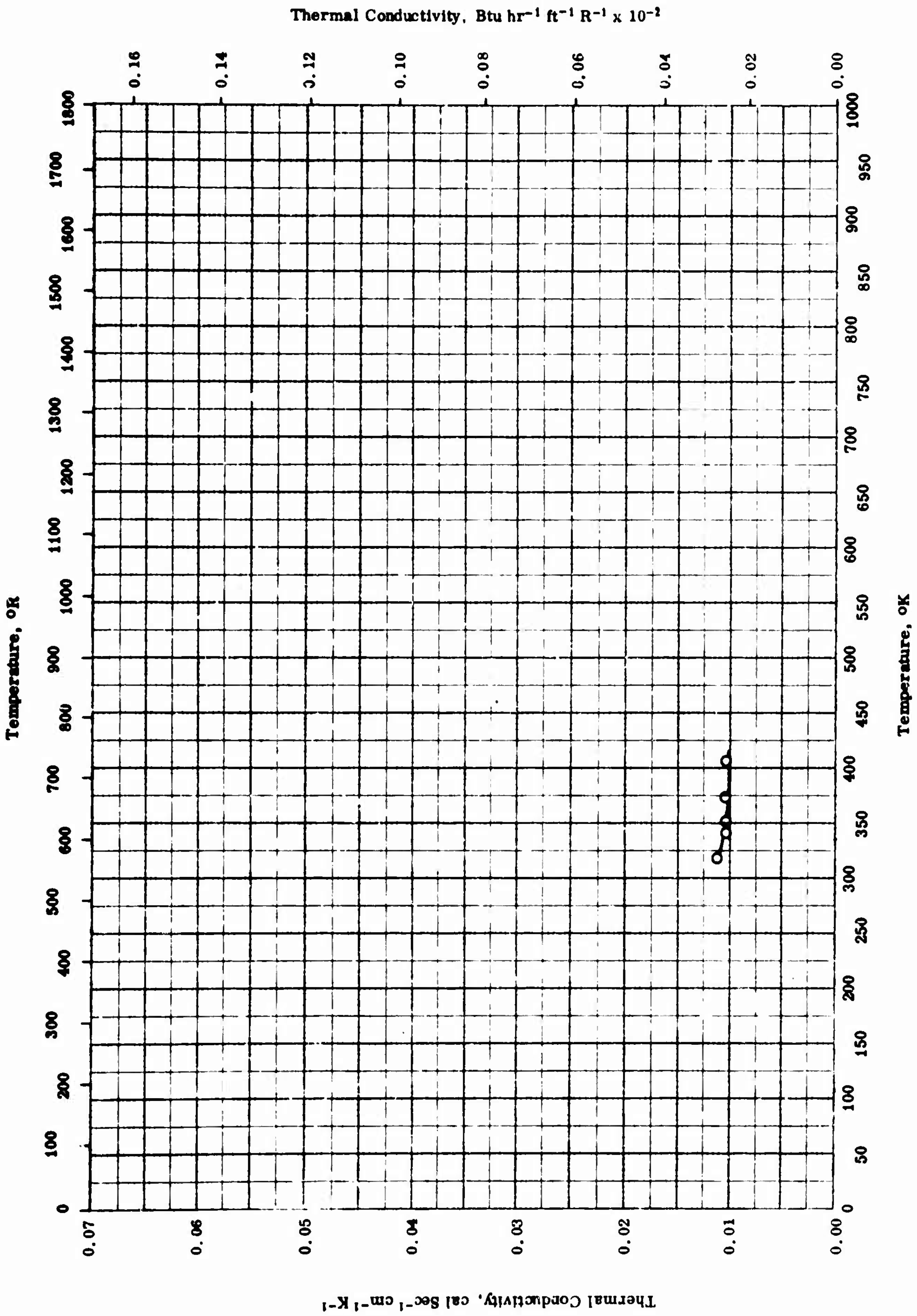


SPECIFIC HEAT -- CALCIUM TITANATES

SPECIFIC HEAT -- CALCIUM TITANATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	46-3	298-1800		Calcium metatitanates, $CaTiO_3$ ($CaO \cdot TiO_2$); 0.69 acid soluble as CaO and 0.05 CO_2.	Prepared by heating an intimate stoichiometric mixture of pure $CaCO_3$ and TiO_2 under vacuum 41 hrs at 1300 - 1350 C; material cooled to room temperature and reground to -100 mesh twice.
□	55-34	53-298		Tricalcium dititanate, $Ca_3Ti_2O_7$ ($3\ CaO \cdot 2\ TiO_2$); 48.61 TiO_2.	Prepared from reagent grade $CaCO_3$ and pure TiO_2; pressed into pellets; heated five times 12 hrs at 1400 - 1500 C.

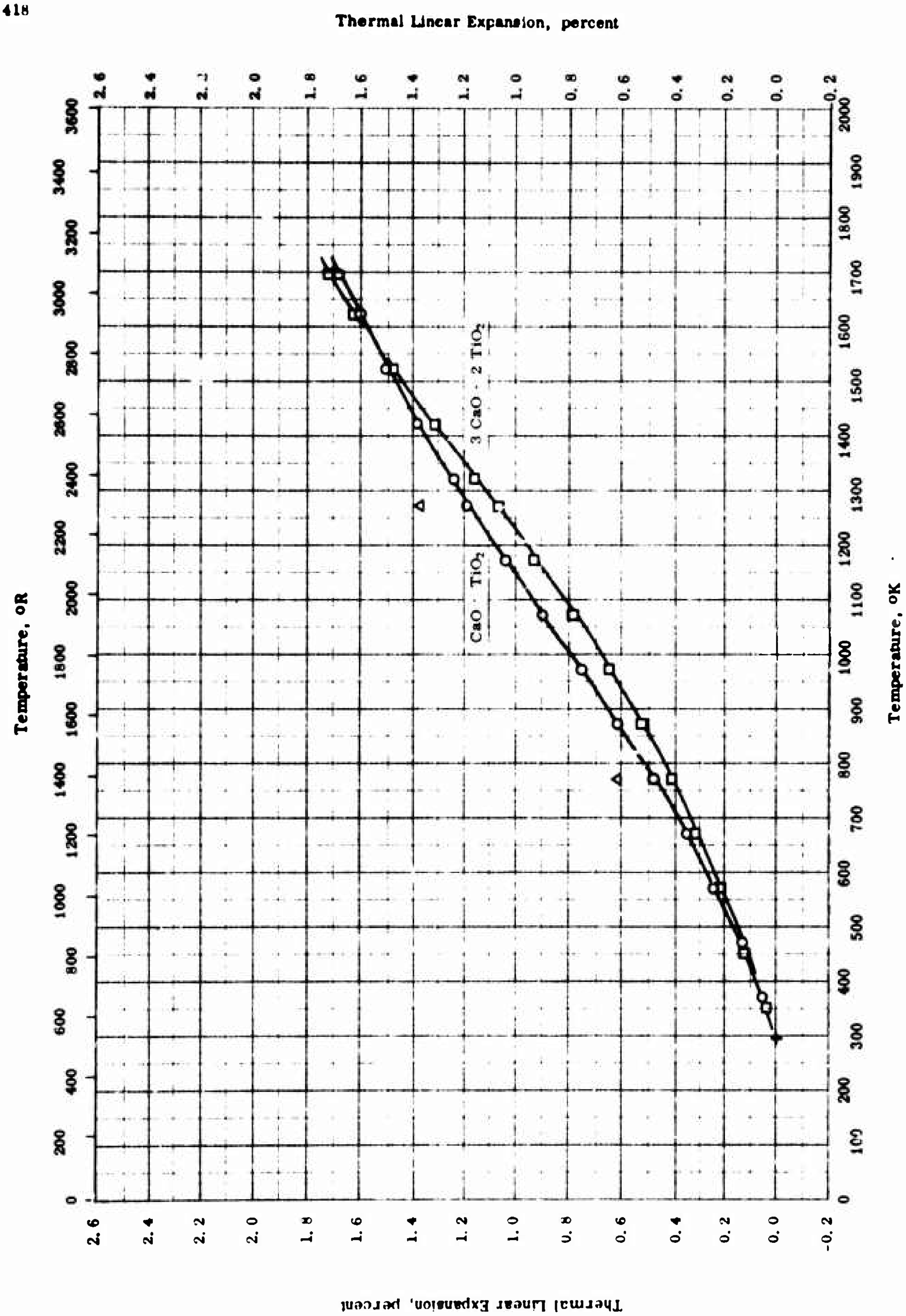


THERMAL CONDUCTIVITY -- CALCIUM TITANATE

THERMAL CONDUCTIVITY -- CALCIUM TITANATE

REFERENCE INFORMATION

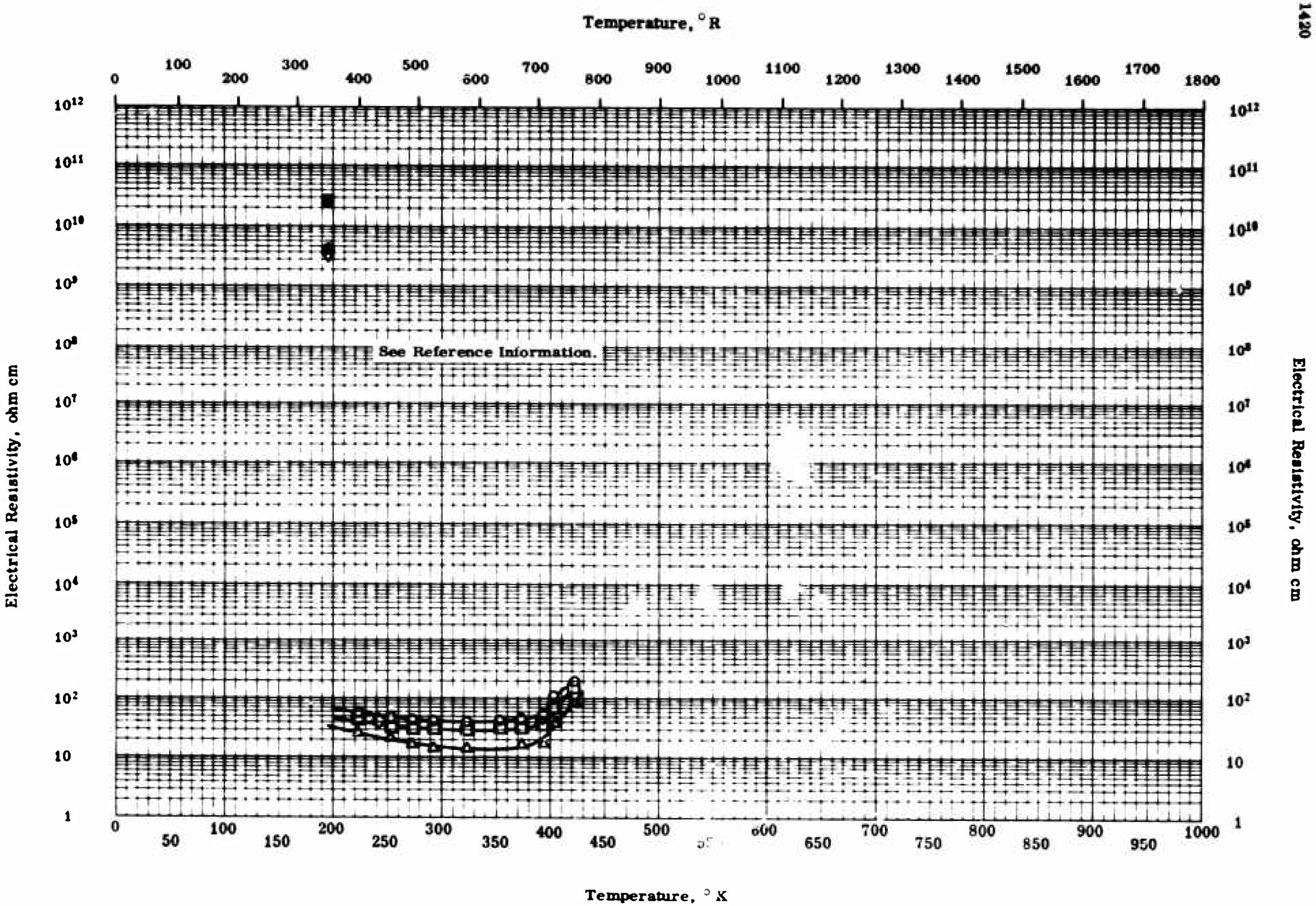
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	54-8	318-406		CaO · TiO_2.	Tested in vacuum.



THERMAL LINEAR EXPANSION -- CALCIUM TITANATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
△	60-35	298-1273		$CaO \cdot TiO_2$.	
○	54-33	373-1698		$CaO \cdot TiO_2$; calcium metatitanate.	Pressed and fired to 1600 C.
□	54-33	353-1698		$3\ CaO \cdot 2\ TiO_2$.	Same as above.

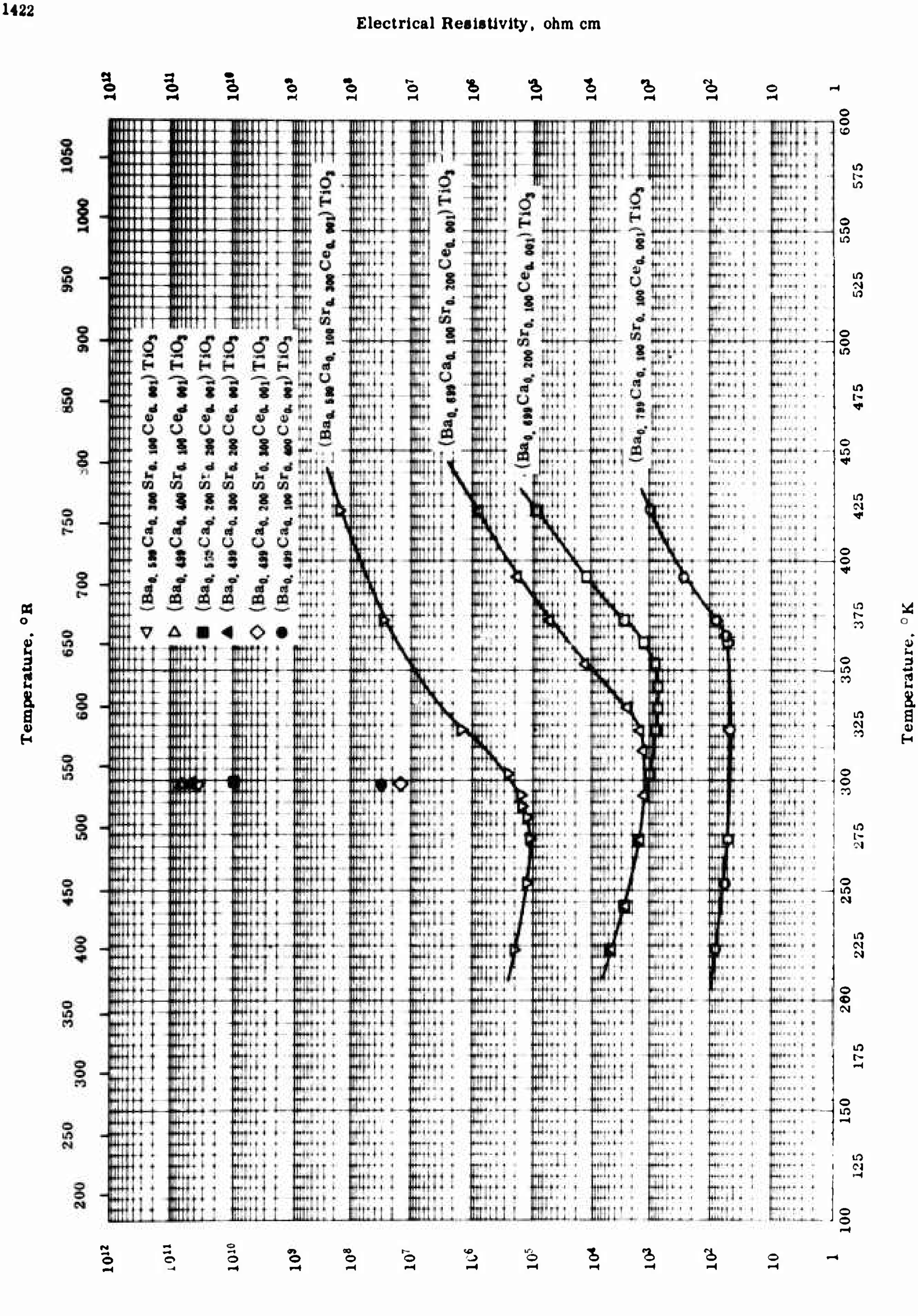


ELECTRICAL RESISTIVITY -- CALCIUM BARIUM CERIUM TITANATE

ELECTRICAL RESISTIVITY -- CALCIUM BARIUM CERIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-23	223-423		$(Ba_{0.949}Ca_{0.050}Ce_{0.001})TiO_3$; prepared from barium titanyl oxalate, calcium carbonate, cerium oxalate, and titanium dioxide (all of 99.99 purity); grayish blue.	Calcined stoichiometric amount of raw materials at 1000 C for 1 hr., crushed to 80 mesh, moistened and pressed with 600 $Kg\text{-}cm^{-2}$ to disks of 2 mm thick and 20 mm dia., and fired at 1350 to 1400 C for 1-2 hrs; equivalent water absorption 1.46%.
□	61-23	223-423		$(Ba_{0.899}Ca_{0.100}Ce_{0.001})TiO_3$; same as above; grayish blue.	Same as above; equivalent water absorption 0.55%.
△	61-23	223-423		$(Ba_{0.849}Ca_{0.150}Ce_{0.001})TiO_3$; same as above; grayish blue.	Same as above; equivalent water absorption 1.00%.
◇	61-23	223-423		$(Ba_{0.799}Ca_{0.200}Ce_{0.001})TiO_3$; same as above; grayish blue.	Same as above; equivalent water absorption 1.17%.
●	61-23	298		$(Ba_{0.699}Ca_{0.300}Ce_{0.001})TiO_3$; same as above; buff.	Same as above; equivalent water absorption 0.66%.
■	61-23	298		$(Ba_{0.599}Ca_{0.400}Ce_{0.001})TiO_3$; same as above; buff.	Same as above; equivalent water absorption 0.05%.
▽	61-23	298		$(Ba_{0.499}Ca_{0.500}Ce_{0.001})TiO_3$; same as above; buff.	Same as above; equivalent water absorption 0.12%.



ELECTRICAL RESISTIVITY -- CALCIUM STRONTIUM BARIUM CERIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-23	223-423		$(Ba_{0.799}Ca_{0.100}Sr_{0.100}Ce_{0.001})TiO_3$, prepared from 99.99 pure barium titanyl oxatate, titanium dioxide, cerium oxalate, calcium carbonate, and 99.9 pure strontium carbonate; grayish blue.	Calcined stoichiometric amount of raw materials at 1000 C for 1 hr, crushed to 80 mesh, moistened and pressed with 600 $Kg\text{-}cm^{-2}$ to disks of 2 mm thick and 20 mm dia., and then fired at 1350-1400 C for 1-2 hrs; equivalent water absorption = 1.84%.
□	61-23	223-423		$(Ba_{0.699}Ca_{0.200}Sr_{0.100}Ce_{0.001})TiO_3$; same as above; light bluish buff.	Same as above; equivalent water absorption = 2.11%.
◁	61-23	298		$(Ba_{0.599}Ca_{0.300}Sr_{0.100}Ce_{0.001})TiO_3$; same as above; pink.	Same as above; equivalent water absorption = 5.68%.
▷	61-23	298		$(Ba_{0.499}Ca_{0.400}Sr_{0.100}Ce_{0.001})TiO_3$; same as above; pink.	Same as above; equivalent water absorption = 5.68%.
△	61-23	223-423		$(Ba_{0.699}Ca_{0.100}Sr_{0.200}Ce_{0.001})TiO_3$; same as above; grayish buff.	Same as above; equivalent water absorption = 1.49%.
■	61-23	298		$(Ba_{0.599}Ca_{0.200}Sr_{0.200}Ce_{0.001})TiO_3$; same as above; pink.	Same as above; equivalent water absorption = 2.85%.
▲	61-23	298		$(Ba_{0.499}Ca_{0.300}Sr_{0.200}Ce_{0.001})TiO_3$; same as above; pink.	Same as above; equivalent water absorption = 2.14%.
▽	61-23	223-423		$(Ba_{0.599}Ca_{0.100}Sr_{0.300}Ce_{0.001})TiO_3$; same as above; pink.	Same as above; equivalent water absorption = 0.69%.
◇	61-23	298		$(Ba_{0.499}Ca_{0.200}Sr_{0.300}Ce_{0.001})TiO_3$; same as above; pink. (Continued onto next page)	Same as above; equivalent water absorption = 3.30%.

ELECTRICAL RESISTIVITY -- CALCIUM STRONTIUM BARIUM CERIUM TITANATE (continued)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
●	61-23	298		$(Ba_{0.499}Ca_{0.100}Sr_{0.400}Ce_{0.001})TiO_3$; same as above; light pink.	Same as above; equivalent water absorption = 13.98%.

PROPERTIES OF IRON TITANATE

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Melting Point	1640	2952
Heat of Fusion	142.8	257

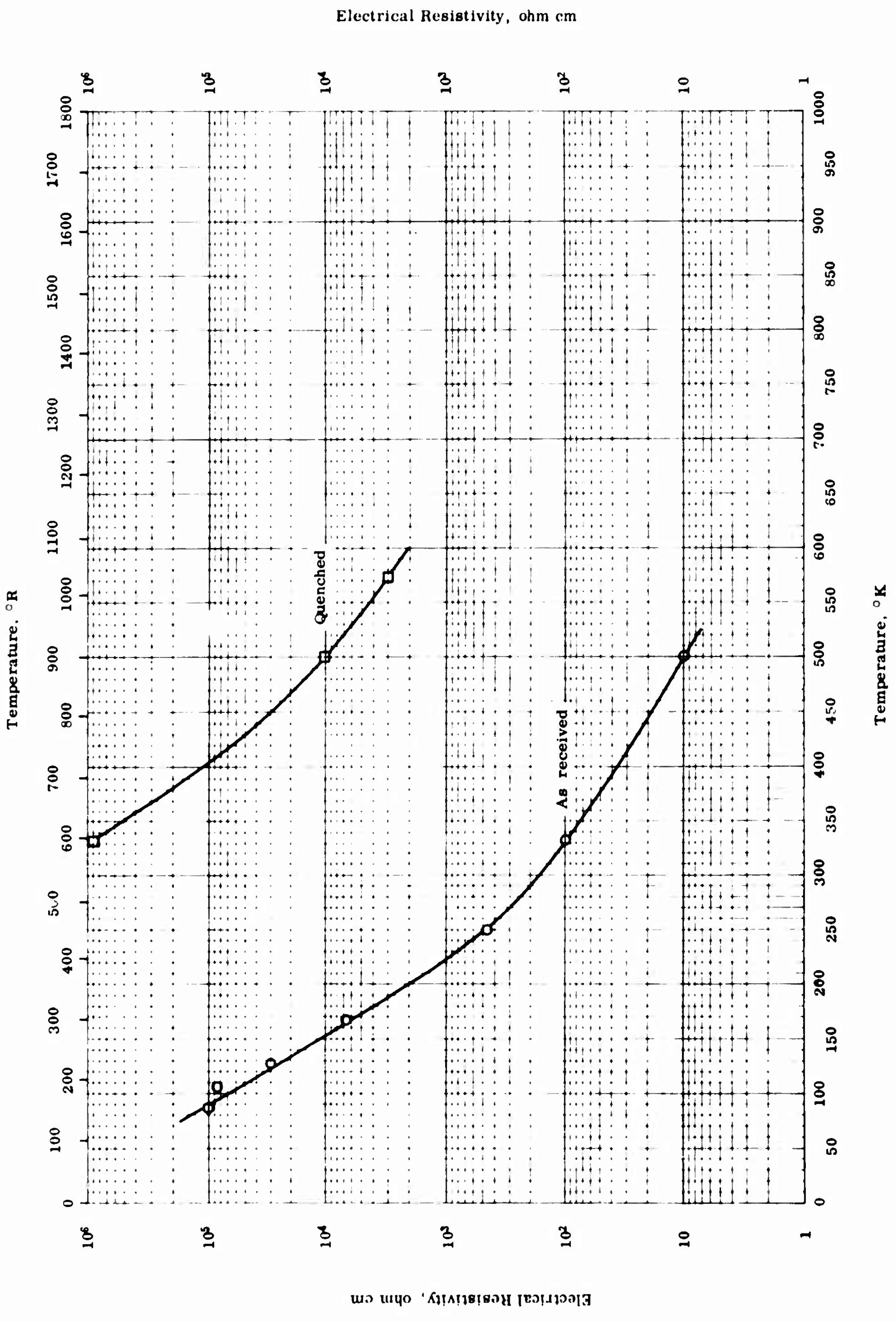
REPORTED VALUES

Melting Point		K	R
	○	1640	2952
Heat of Fusion		cal g^{-1}	Btu lb^{-1}
	□	142.8	257

PROPERTIES OF IRON TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	46-3	1640		99.4 $FeO \cdot TiO_2$ and 0.6 SiO_2 (Ilmenite).	Powdered ingredients mixed and heated in vacuum 30 hrs at 1165 - 1300 C; M. P. by visual observation.
□	46-3	1640		Same as above.	Same as above; Δh_f from enthalpy difference above and below M. P.

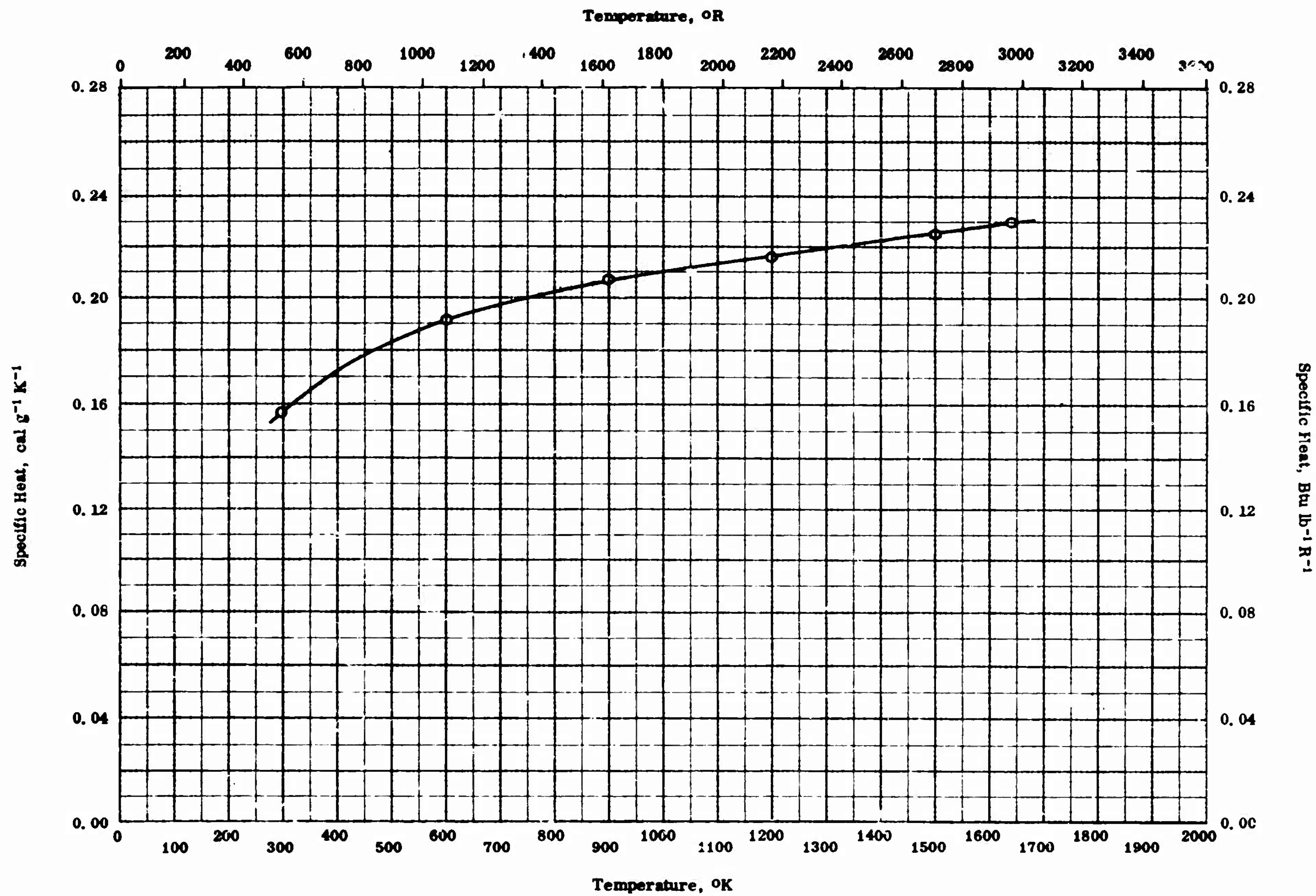


ELECTRICAL RESISTIVITY -- IRON TITANATE

ELECTRICAL RESISTIVITY -- IRON TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-10	91-500		$FeO \cdot TiO_2$, ilmenite; actual ratio Fe to Ti 0.9945: 1.	Measured in air and in vacuum.
□	56-10	286-607		Same as above.	Quenched; measured in vacuum.

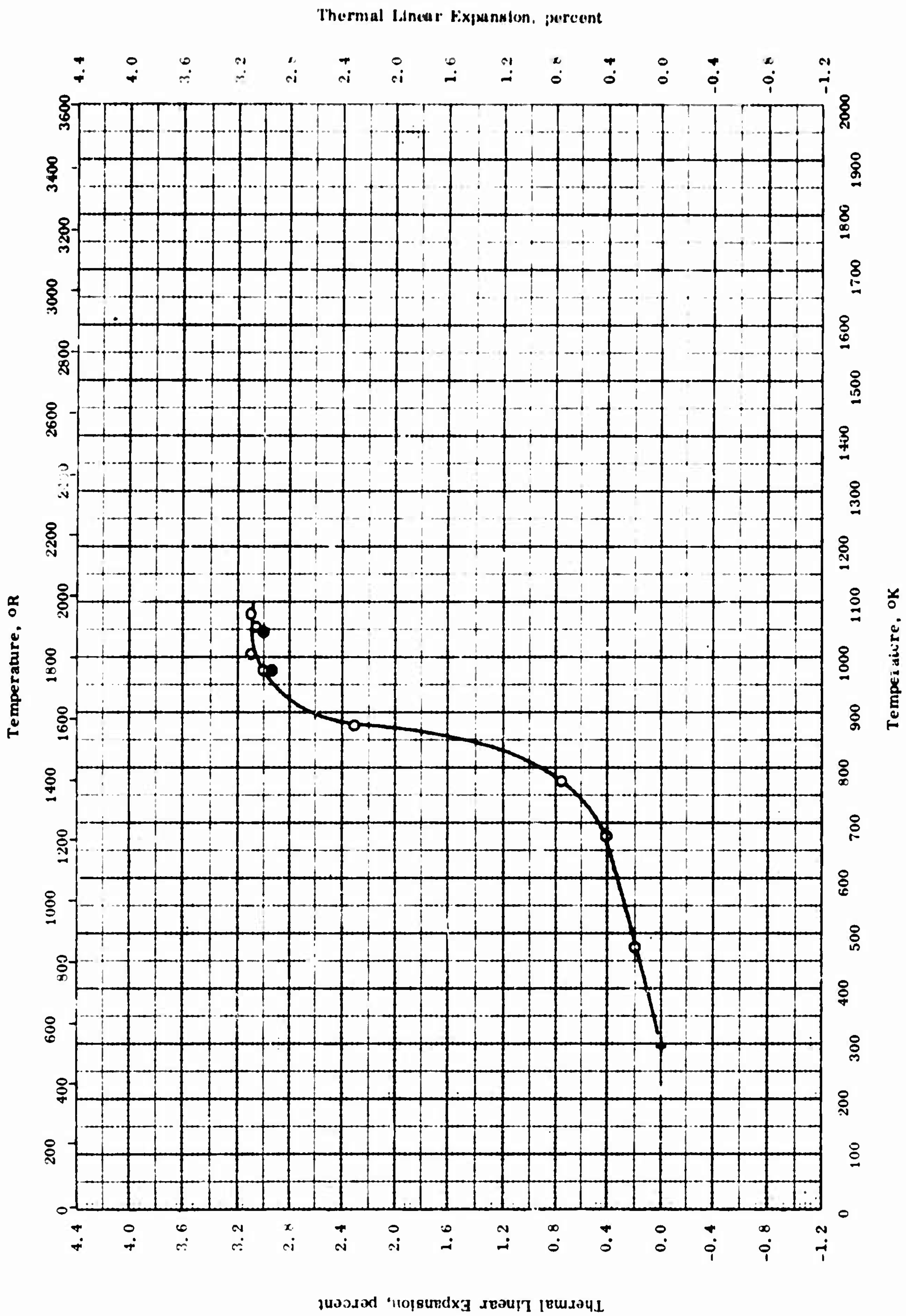


SPECIFIC HEAT -- IRON TITANATE

SPECIFIC HEAT -- IRON TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	46-3	298-1800		Ilmenite; 99.4 $FeTiO_3$ and 0.6 SiO_2.	Powdered raw materials mixed and heated in vacuum 30 hrs at 1165 - 1200 C.

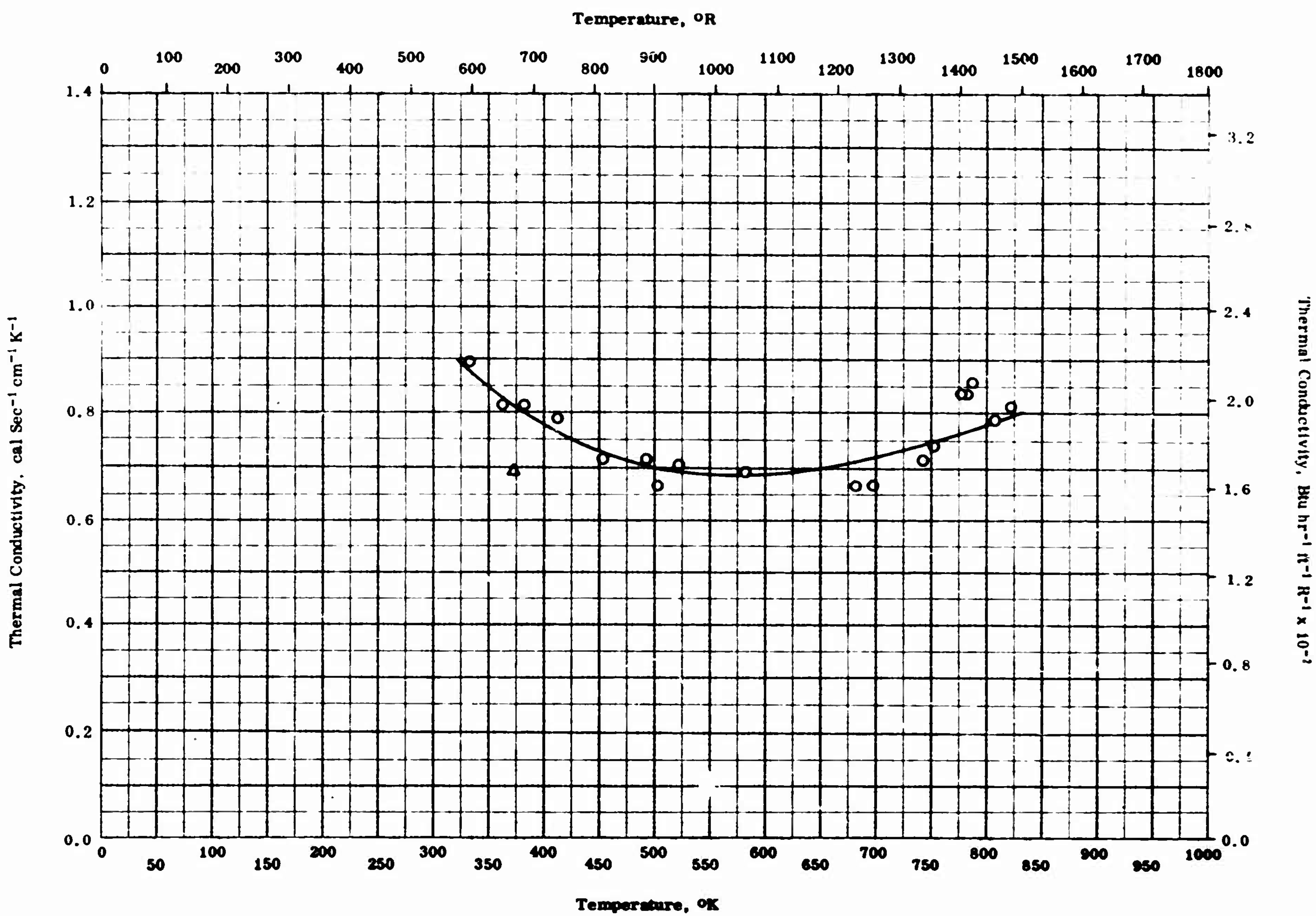


THERMAL LINEAR EXPANSION -- IRON TITANATE

THERMAL LINEAR EXPANSION -- IRON TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range ^oK	Rept. Error %	Sample Specifications	Remarks
○	56-10	290-1073		Ilmenite; prepared by Fe_2O_3 +3 TiO_2 + Fe = 3 $FeTiO_3$; final mole ratio Fe : Ti = 0.9945 : 1.	Powders milled, pressed, and sintered 6 hrs at 1350 C in vacuum; measured with heating rate of 2 C sec^{-1}.
●	56-10	973-1073		Same as above.	Cooling cycle for above sample.

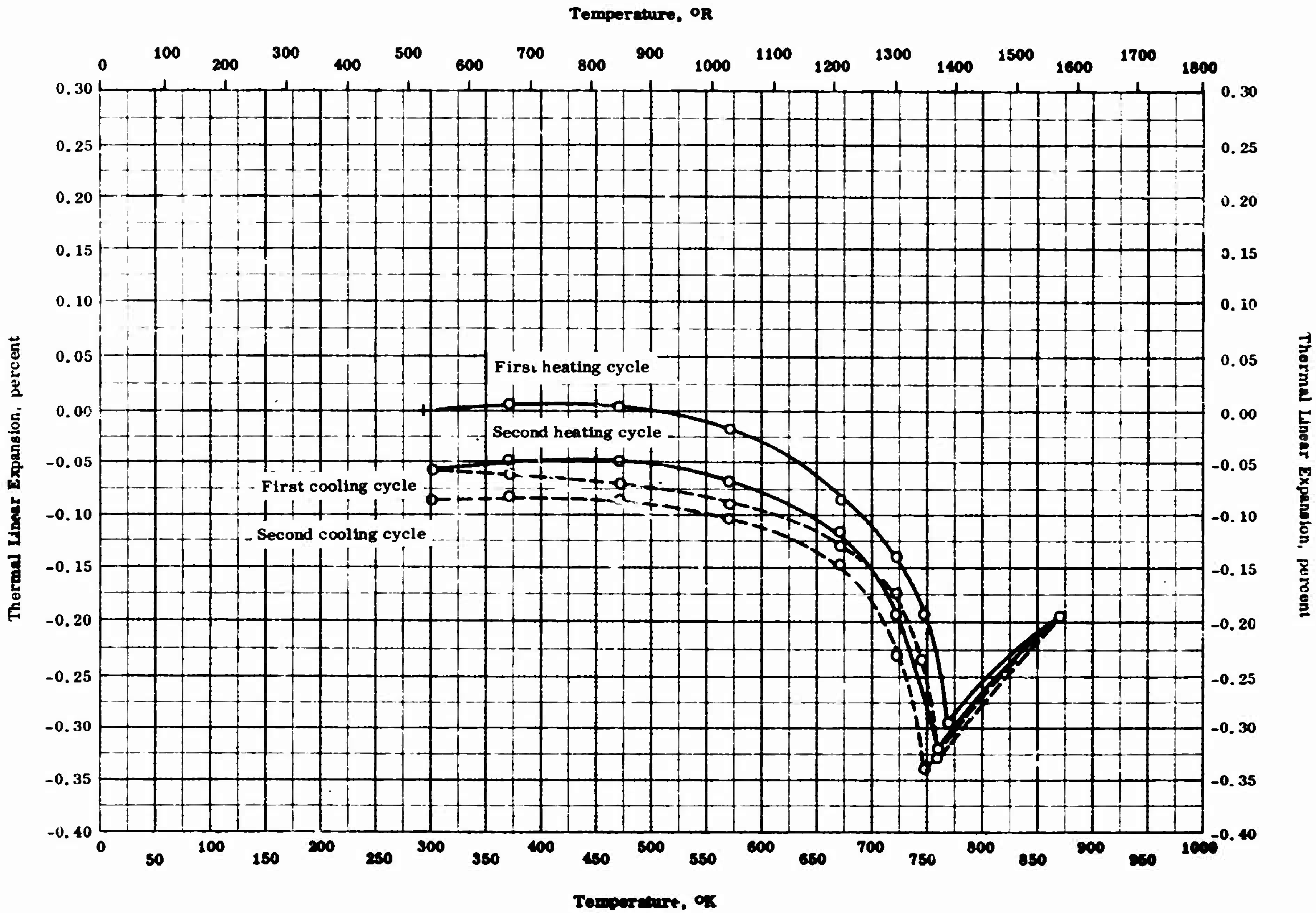


THERMAL CONDUCTIVITY -- LEAD METATITANATE

THERMAL CONDUCTIVITY -- LEAD METATITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-2	333-823		$PbO \cdot TiO_2$; density 6.86 g cm^{-3} and porosity 14.6%.	Prepared by meshing and pressing (pressure 0.53 ton cm^{-2}) a crashed and pulverized fired product of water mixed PbO and TiO_2; sintered at 1250 C for 2 hrs; measured in vacuum.
△	58-4	373		$PbO \cdot TiO_2$.	

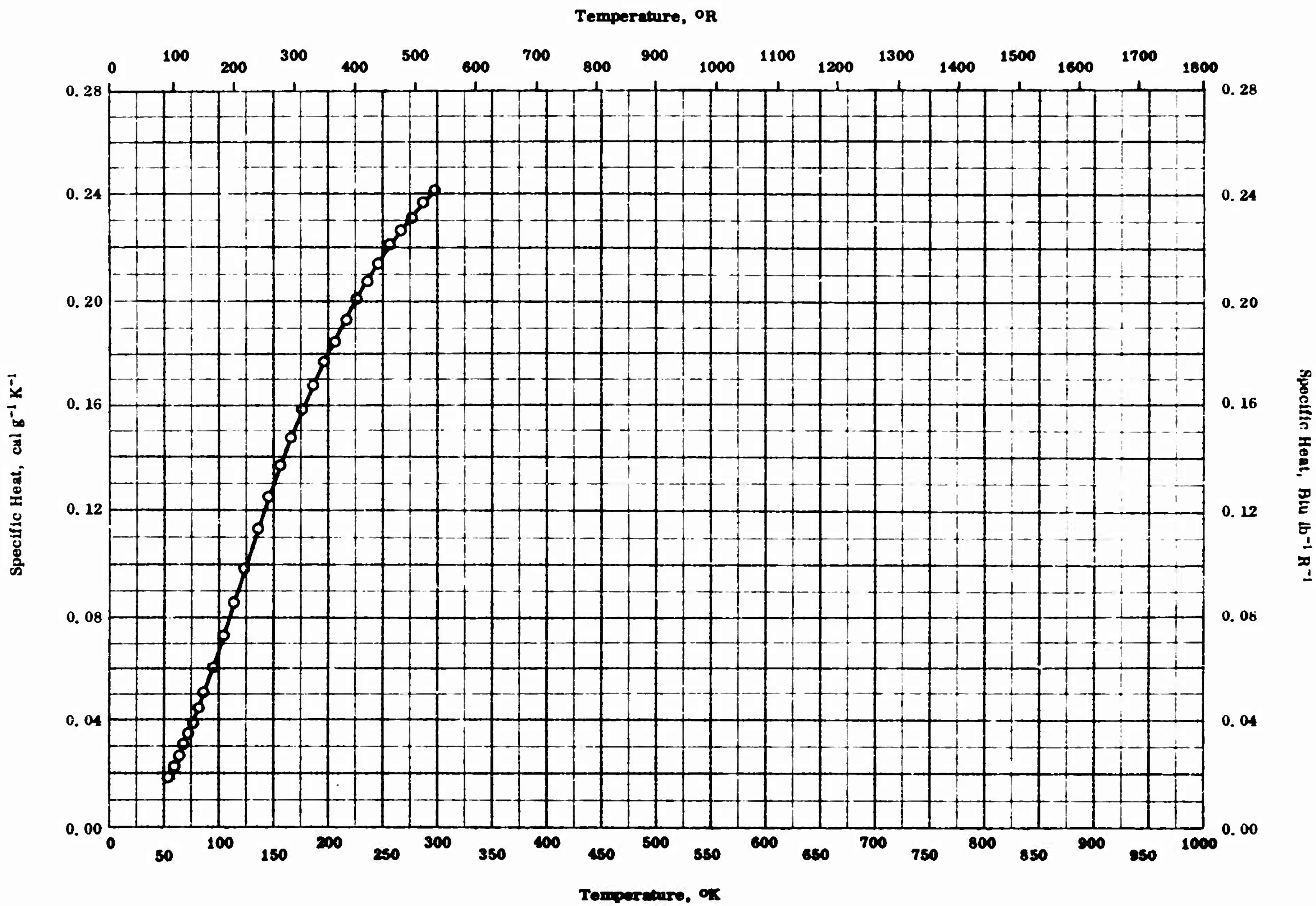


THERMAL LINEAR EXPANSION -- LEAD METATITANATE

THERMAL LINEAR EXPANSION -- LEAD METATITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	62-38	301-870		$PbTiO_3$ + 0.1 m/o CaF_2; prepared from high purity TiO_2 and reagent-grade PbO; dimensions 4.25 cm by 1 cm by 0.5 cm.	TiO_2 and PbO mixed in acetone, added purest grade CaF_2 available, calcined at 900 C for 1 hr, cooled, reground, pressed at 50,000 psi, and fired at 1200 C for 1 hr with heating rate of about 200 C hr^{-1}; small zircon saggors used in sintering run to minimize the vaporization of PbO; measured with a heating rate of 3 C min^{-1} or with a cooling rate 3 C min^{-1} from 600 C to 150 C and a slower rate below 150 C.

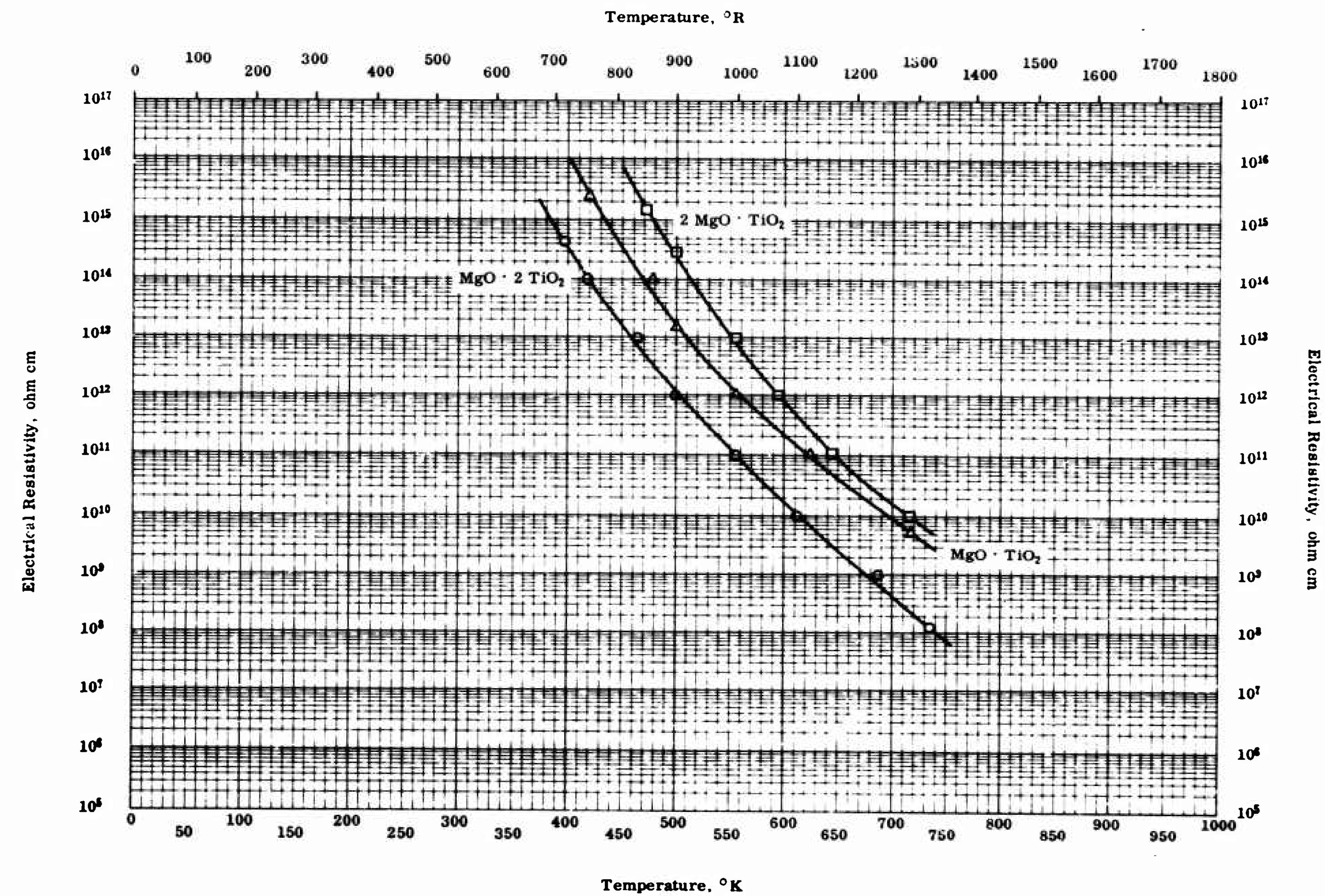


SPECIFIC HEAT -- LITHIUM TITANATE

SPECIFIC HEAT -- LITHIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	55-34	54-298		$Li_2O \cdot TiO_2$; 72. 70 TiO_2, 0. 06 Ni + Pt and 0. 03 SiO_2.	Prepared from reagent grade lithium carbonate and pure titania; heated 6 times for 70 hrs at 1000 - 1050 C and 30 hrs at 1150 C.

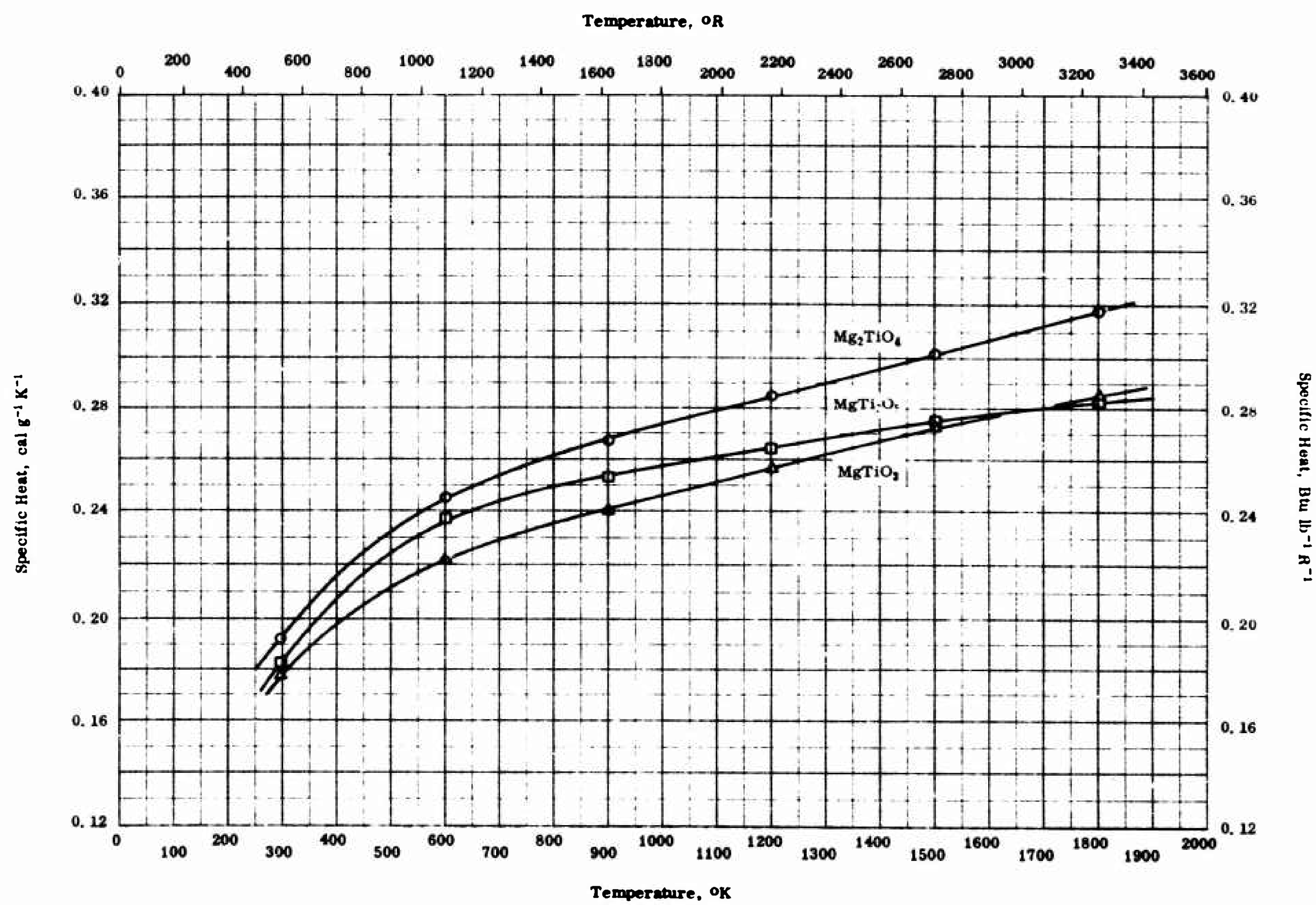


ELECTRICAL RESISTIVITY -- MAGNESIUM TITANATES

ELECTRICAL RESISTIVITY -- MAGNESIUM TITANATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-15	398-735		$MgO \cdot 2TiO_2$.	
□	56-15	474-717		$2MgO \cdot TiO_2$.	
△	56-15	420-717		$MgO \cdot TiO_2$.	

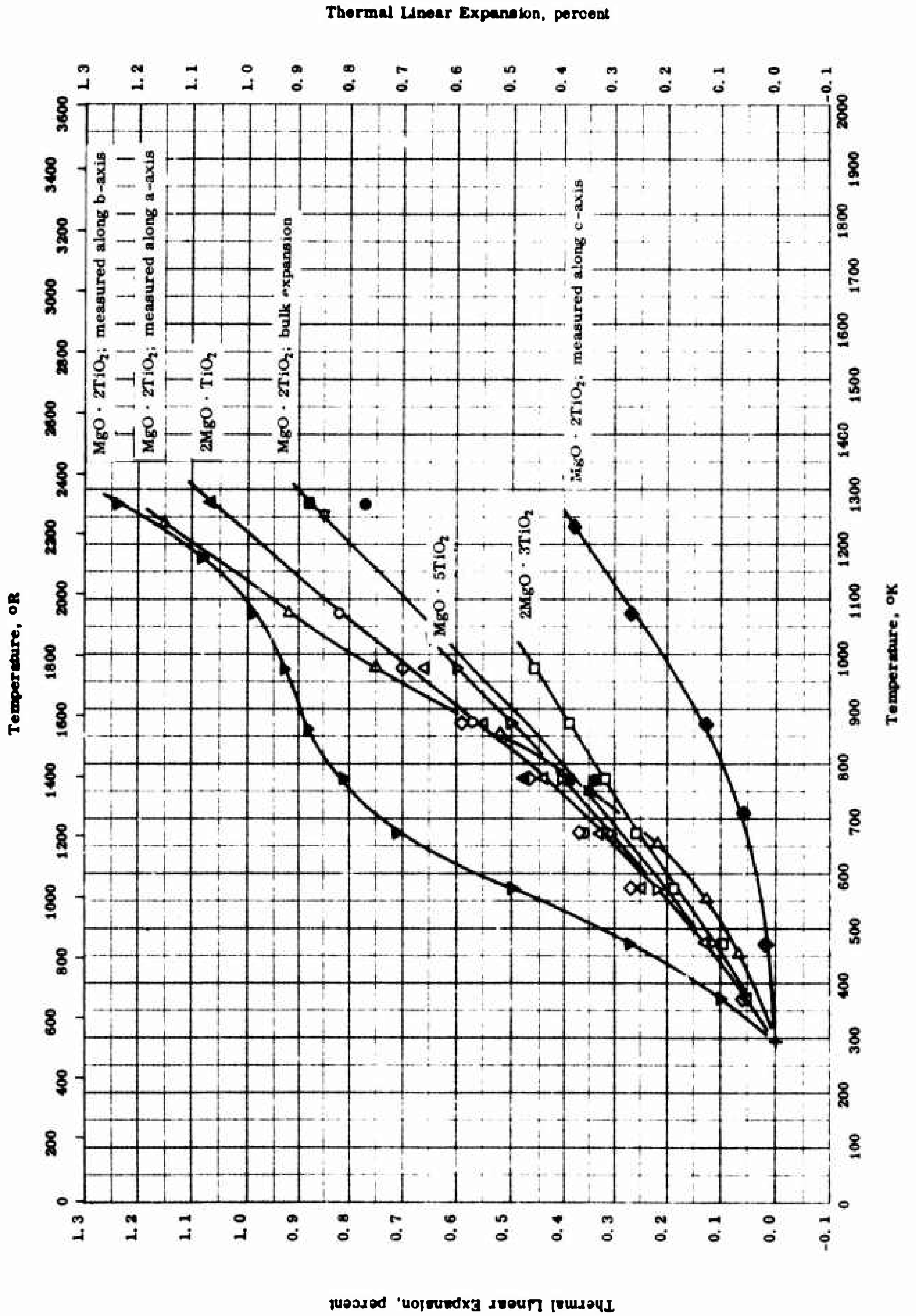


SPECIFIC HEAT -- MAGNESIUM TITANATES

SPECIFIC HEAT -- MAGNESIUM TITANATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-20	298-1800	0.5	Magnesium orthotitanate, $2\,MgO \cdot TiO_2$; 49.53 TiO_2 and 0.21 SiO_2.	Oxides were mixed, pressed at 15,000 psi, and heated for long periods at 1300 - 1500 C.
□	52-20	298-1800	0.5	Magnesium dititanate, $MgO \cdot 2\,TiO_2$; 79.63 TiO_2 and 0.16 TiO_3.	Same as above.
△	46-3	298-1800		Magnesium metatitanate, $MgO \cdot TiO_2$; 99 $MgTiO_3$ and 0.45 MgO.	

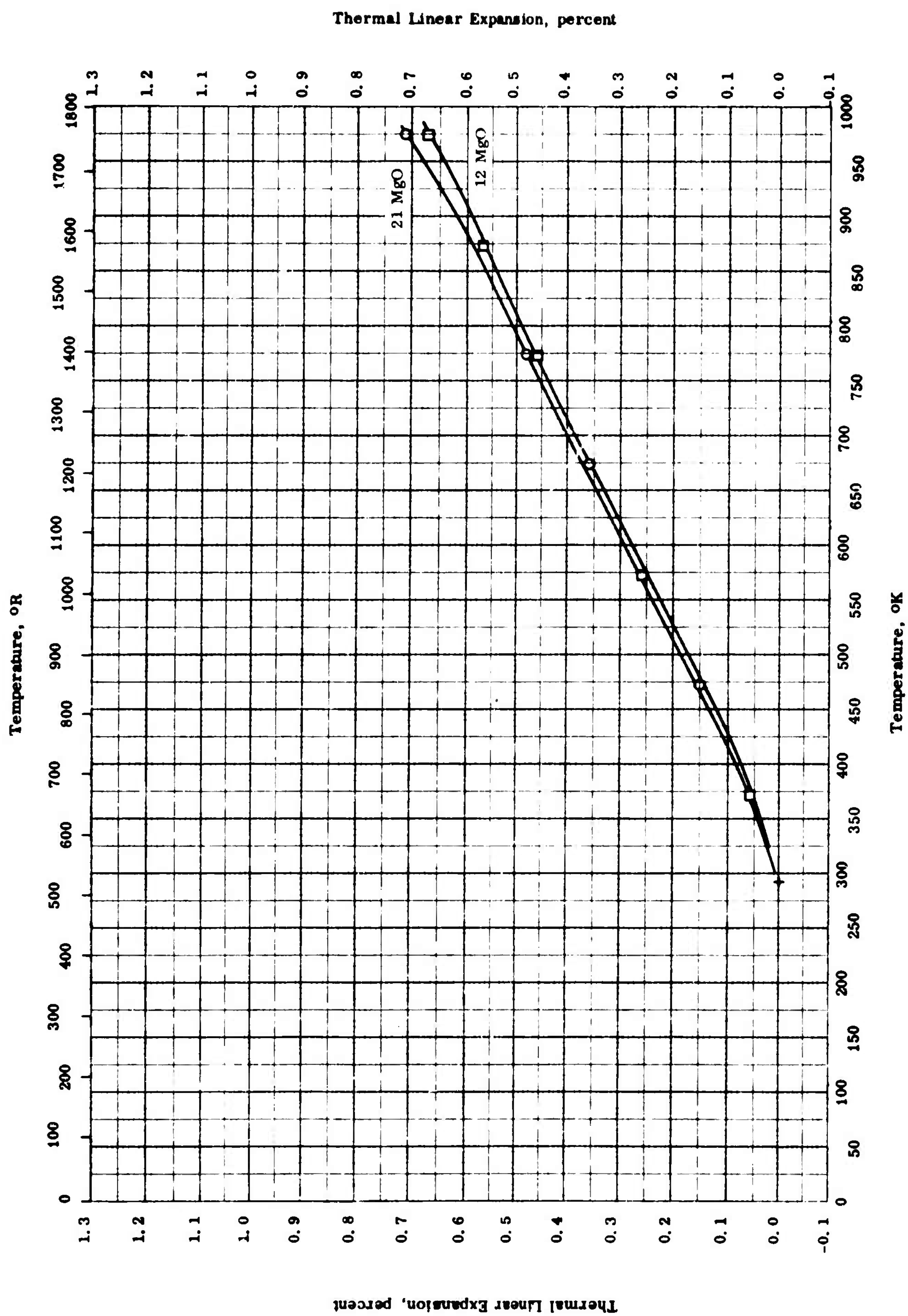


THERMAL LINEAR EXPANSION -- MAGNESIUM TITANATES

THERMAL LINEAR EXPANSION -- MAGNESIUM TITANATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
●	60-35	298-1273		$MgO \cdot TiO_2$.	
■	60-35	298-1273		$MgO \cdot 2TiO_2$.	
▲	60-35	298-1273		$2MgO \cdot TiO_2$.	
○	49-7	293-1273		$2MgO \cdot TiO_2$; 50.2 MgO and 49.8 TiO_2.	Fired 2 hrs at 1400 C.
△	48-6	373-973		$2MgO \cdot TiO_2$; 50.2 TiO_2 and 49.8 MgO.	Heated 12 hrs at 1100 C and matured 5 hrs at 1250 - 1450 C.
◇	48-6	373-973		$MgO \cdot TiO_2$; 66.5 TiO_2 and 33.5 MgO.	Same as above.
□	48-6	373-973		$2MgO \cdot 3TiO_2$; 74.8 TiO_2 and 25.2 MgO.	Same as above.
▽	48-6	473-973		$MgO \cdot 5TiO_2$; 90.8 TiO_2 and 9.2 MgO.	Same as above.
▷	52-3	453-1233		Magnesium dititanate.	Measured along a-axis of crystal by x-ray diffraction.
▼	52-3	373-1273		Same as above.	Measured along b-axis of crystal by x-ray diffraction.
◆	52-3	473-1273		Same as above.	Measured along c-axis of crystal by x-ray diffraction.
◁	52-3	298-1253		Same as above.	Random.

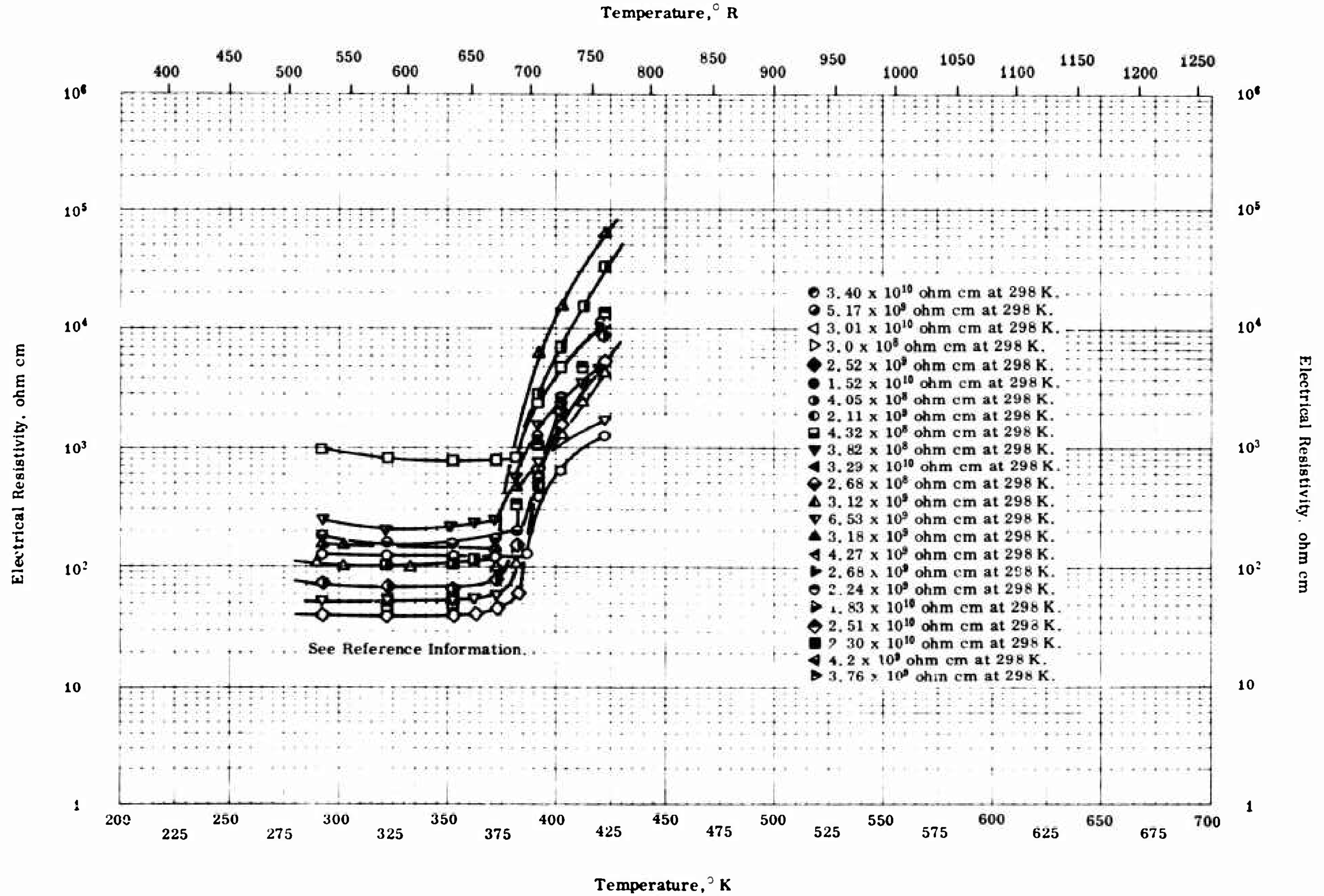


THERMAL LINEAR EXPANSION -- MAGNESIUM BARIUM TITANATE

THERMAL LINEAR EXPANSION -- MAGNESIUM BARIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	48-6	293-973		54.5 TiO_2, 24.5 BaO, and 21.0 MgO.	Heated 12 hrs at 1100 C and matured 6 hrs at 1250 - 1450 C.
□	48-6	293-973		75.1 TiO_2, 13.0 BaO and 11.9 MgO.	Same as above.



ELECTRICAL RESISTIVITY -- MAGNESIUM BARIUM CERIUM TITANATE

ELECTRICAL RESISTIVITY -- MAGNESIUM BARIUM CERIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-23	293-423		$(Ba_{0.998}\,Mg_{0.001}\,Ce_{0.001})\,TiO_3$; prepared from barium titanyl oxalate, magnesium carbonate, cerium oxalate, and titanium dioxide (all with 99.99 purity); Greyish blue color.	Calcined stoichiometric amount of raw materials at 1000 C for 1 hr., crushed to 80 mesh, moistened and pressed with 600 $Kg\text{-}cm^{-2}$ to disks of 2 mm thick and 20 mm dia, and then fired at 1350-1400 C for 1-2 hrs.; equivalent water absorption = 3.18%.
□	61-23	293-423		$(Ba_{0.994}\,Mg_{0.005}\,Ce_{0.001})\,TiO_3$; same as above; light bluish brown.	Same as above; equivalent water absorption = 1.77%.
◁	61-23	298		$(Ba_{0.989}\,Mg_{0.010}\,Ce_{0.001})\,TiO_3$; same as above; maroon.	Same as above; equivalent water absorption 0.21%.
▷	61-23	298		$(Ba_{0.0979}\,Mg_{0.020}\,Ce_{0.001})\,TiO_3$; same as above; tan.	Same as above; equivalent water absorption = 5.46%.
◆	61-23	298		$(Ba_{0.949}\,Mg_{0.050}\,Ce_{0.001})\,TiO_3$; same as above; light tan.	Same as above; equivalent water absorption = 4.85%.
△	61-23	293-423		$(Ba_{0.996}\,Mg_{0.001}\,Ce_{0.003})\,TiO_3$; same as above; grayish blue.	Same as above; equivalent water absorption = 0.93%.
◇	61-23	293-423		$(Ba_{0.0994}\,Mg_{0.003}\,Ce_{0.003})\,TiO_3$; same as above; grayish blue.	Same as above; equivalent water absorption: 1.37%.
▽	61-23	293-423		$(Ba_{0.0992}\,Mg_{0.005}\,Ce_{0.003})\,TiO_3$; same as above; grayish blue.	Same as above; equivalent water absorption 2.34%.

(continued onto next page)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
◒	61-23	293-423		$(Ba_{0.987}\ Mg_{0.010}\ Ce_{0.003})\ TiO_3$; same as above; light bluish brown.	Same as above; equivalent water absorption- 2.40%.
●	61-23	298		$(Ba_{0.982}\ Mg_{0.015}\ Ce_{0.003})\ TiO_3$; same as above; maroon.	Same as above; equivalent water abosorption= 2.24%.
◑	61-23	298		$(Ba_{0.977}\ Mg_{0.020}\ Ce_{0.003})\ TiO_3$; same as above; maroon.	Same as above; equivalent water absorption= 2.27%.
◐	61-23	298		$(Ba_{0.947}\ Mg_{0.050}\ Ce_{0.003})\ TiO_3$; same as above; maroon.	Same as above; equivalent water absorption 1.58%.
▲	61-23	293-423		$(Ba_{0.994}\ Mg_{0.001}\ Ce_{0.005})\ TiO_3$; same as above; grayish green.	Same as above; equivalent water absorption- 1.[illegible]%.
◨	61-23	293-423		$(Ba_{0.992}\ Mg_{0.003}\ Ce_{0.005})\ TiO_3$; same as above; grayish green.	Same as above; equivalent water absorption= 2.35%.
▼	61-23	293-423		$(Ba_{0.990}\ Mg_{0.005}\ Ce_{0.005})\ TiO_3$; same as above; grayish green.	Same as above; equivalent water absorption= 1.94%.
◆	61-23	293-423		$(Ba_{0.985}\ Mg_{0.010}\ Ce_{0.005})\ TiO_3$; same as above; grayish green.	Same as above; equivalent water absorption= 1.37%.
⬓	61-23	293-423		$(Ba_{0.980}\ Mg_{0.015}\ Ce_{0.005})\ TiO_3$; same as above; grayish green.	Same as above; equivalent water absorption= 2.45%.
◧	61-23	293-423		$(Ba_{0.975}\ Mg_{0.020}\ Ce_{0.005})\ TiO_3$; same as above; grayish green.	Same as above; evuivalent water abosrption= 3.32%.

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ELECTRICAL RESISTIVITY -- MAGNESIUM BARIUM CERIUM TITANATE (continued)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
⬓	61-23	298		$(Ba_{0.970}\ Mg_{0.025}\ Ce_{0.005})\ TiO_3$; same as above; maroon.	Same as above; equivalent water absorption= 2.61%.
▼	61-23	298		$(Ba_{0.945}\ Mg_{0.060}\ Ce_{0.005})\ TiO_3$; same as above; maroon.	Same as above; equivalent water absorption= 3.05%.
◀	61-23	298		$(Ba_{0.967}\ Mg_{0.025}\ Ce_{0.008})\ TiO_3$; same as above; orange.	Same as above; equivalent water absorption= 0.09%.
⬙	61-23	298		$(Ba_{0.989}\ Mg_{0.301}\ Ce_{0.010})\ TiO_3$; same as above; orange.	Same as above; equivalent water absorption= 2.84%.
◭	61-23	298		$(Ba_{0.987}\ Mg_{0.003}\ Ce_{0.010})\ TiO_3$; same as above; orange.	Same as above; equivalent water absorption= 0.95%.
▶	61-23	298		$(Ba_{0.985}\ Mg_{0.005}\ Ce_{0.010})\ TiO_3$; same as above; orange.	Same as above; equivalent water absorption = 3.70%.
⯆	61-23	298		$(Ba_{0.980}\ Mg_{0.010}\ Ce_{0.010})\ TiO_3$; same as above; orange.	Same as above; equivalent water absorption= 2.82%.
▲	61-23	298		$(Ba_{0.975}\ Mg_{0.015}\ Ce_{0.010})\ TiO_3$; same as above; orange.	Same as above; equivalent water absorption= 2.43%.
◒	61-23	298		$(Ba_{0.970}\ Mg_{0.020}\ Ce_{0.010})\ TiO_3$; same as above; orange.	Same as above; equivalent water absorption= 1.83%.
◁	61-23	298		$(Ba_{0.940}\ Mg_{0.050}\ Ce_{0.010})\ TiO_3$; same as above; dark maroon.	Same as above; equivalent water absorption= 1.49%.

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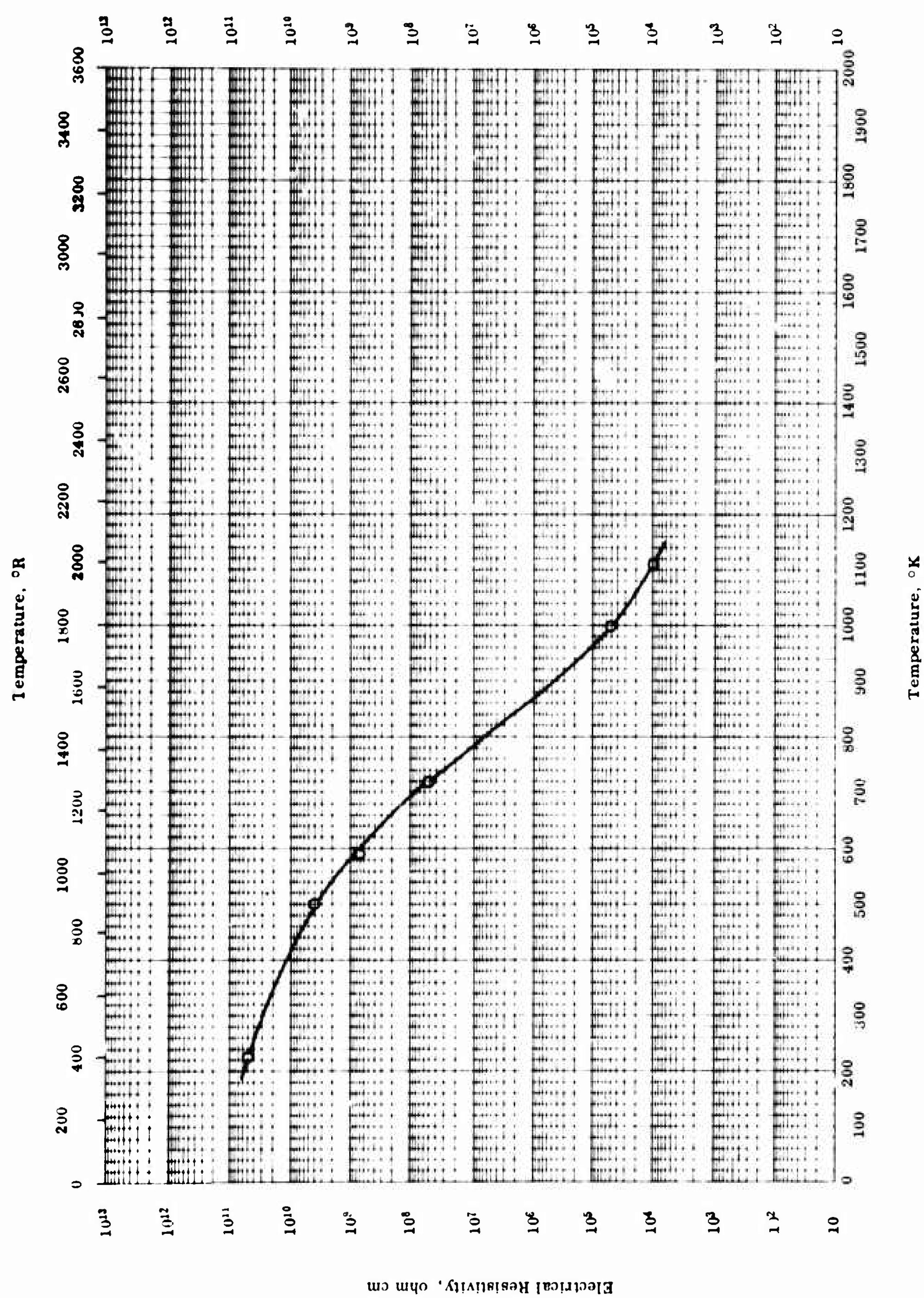
ELECTRICAL RESISTIVITY -- MAGNESIUM BARIUM CERIUM TITANATE (continued)

REFERENCF INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▲	61-23	298		$(Ba_{0.979}\ Mg_{0.001}\ Ce_{0.020})\ TiO_3$; same as above; vermilion.	Same as above; equivalent water absorption = 0.72%.
▼	61-23	298		$(Ba_{0.977}\ Mg_{0.003}\ Ce_{0.020})\ TiO_3$; same as above; vermilion.	Same as above; equivalent water absorption= 0.98%.
▲	61-23	298		$(Ba_{0.975}\ Mg_{0.006}\ Ce_{0.020})\ TiO_3$; same as above; vermilion.	Same as above; equivalent water absorpiton= 0.90%.
◐	61-23	298		$(Ba_{0.970}\ Mg_{0.010}\ Ce_{0.020})\ TiO_3$; same as above; vermilion.	Same as above; equivalent water absorption= 0.63%.
◐	61-23	298		$(Ba_{0.965}\ Mg_{0.015}\ Ce_{0.020})\ TiO_3$; same as above; vermilion.	Same as above; equivalent water absorption= 0.34%.
◆	61-23	298		$(Ba_{0.960}\ Mg_{0.020}\ Ce_{0.020})\ TiO_3$; same as above; maroon.	Same as above; equivalent water absorption= 0.30%.
■	61-23	298		$(Ba_{0.930}\ Mg_{0.050}\ Ce_{0.020})\ TiO_3$; same as above; dark maroon.	Same as above; equivale :t water absorption= 0.09%.

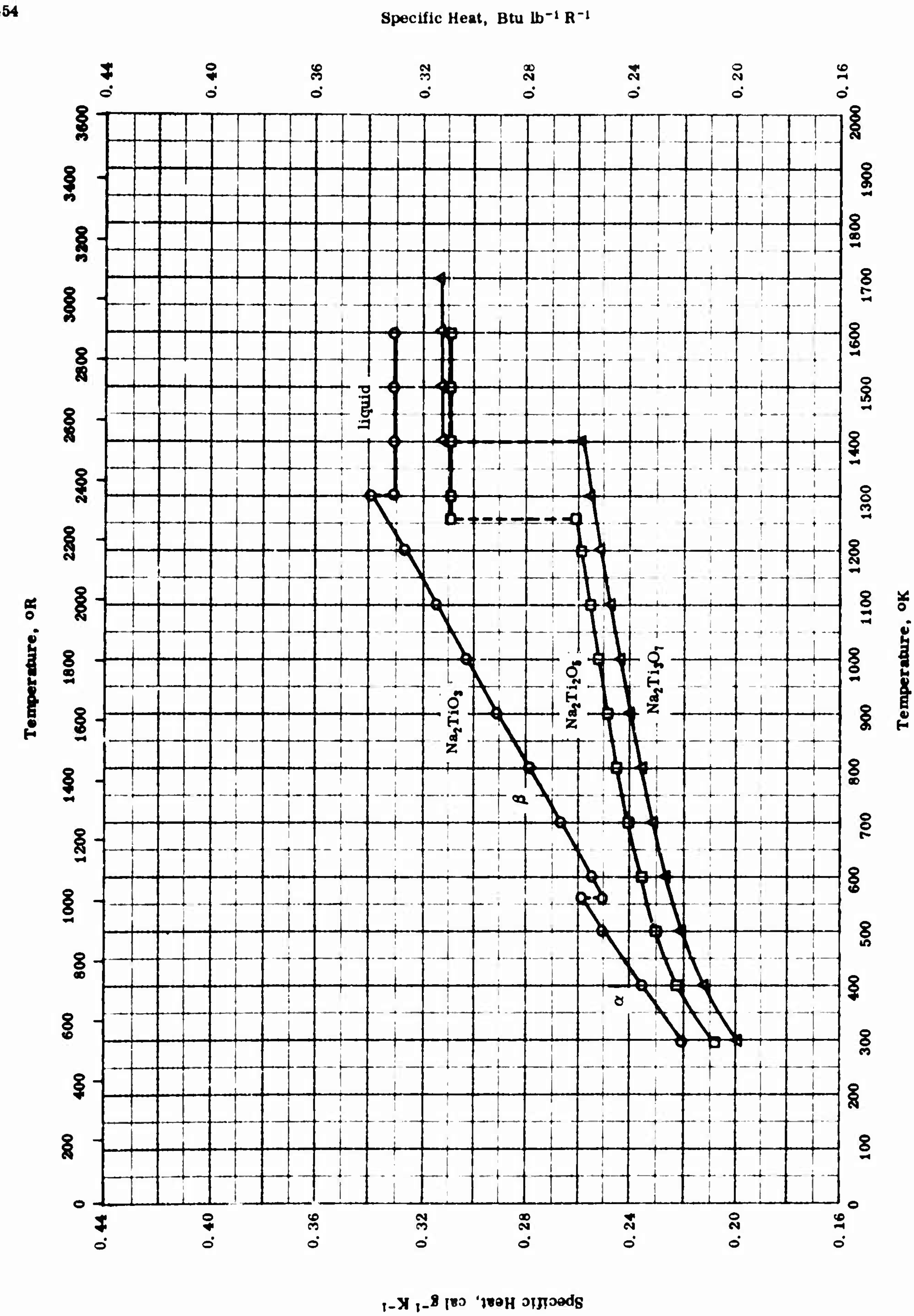


ELECTRICAL RESISTIVITY -- NICKEL METATITANATE

ELECTRICAL RESISTIVITY -- NICKEL METATITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	56-10	222-1111		$NiO \cdot TiO_2$.	Stoichiometric mixture of NiO and TiO_2 heated 3 hrs at 1350 C; tested in air.



SPECIFIC HEAT -- SODIUM TITANATES

SPECIFIC HEAT -- SODIUM TITANATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	45-2	298-1600		98.4 $Na_2O \cdot TiO_2$.	Prepared by treating stoichiometric weights of Na_2CO_3 (prepared from reagent grade $NaHCO_3$) with TiO_2; heated for several hrs with constant pumping to remove CO_2.
□	45-2	298-1600		98.9 $Na_2O \cdot 2TiO_2$.	Prepared by treating stoichiometric weights Na_2CO_3 (prepared from reagent grade $NaHCO_3$) with 98.6 pure TiO_2; heated several hrs at 900 - 1100 C with constant pumping to remove CO_2.
△	45-2	298-1700		98.6 $Na_2O \cdot 3TiO_2$.	Prepared by treating stoichiometric weights Na_2CO_3 (prepared from reagent grade $NaHCO_3$) with 98.6 pure TiO_2; heated several hrs with constant pumping to remove CO_2.

PROPERTIES OF STRONTIUM TITANATE

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density.	5.11	319
Melting Point	2323	4182

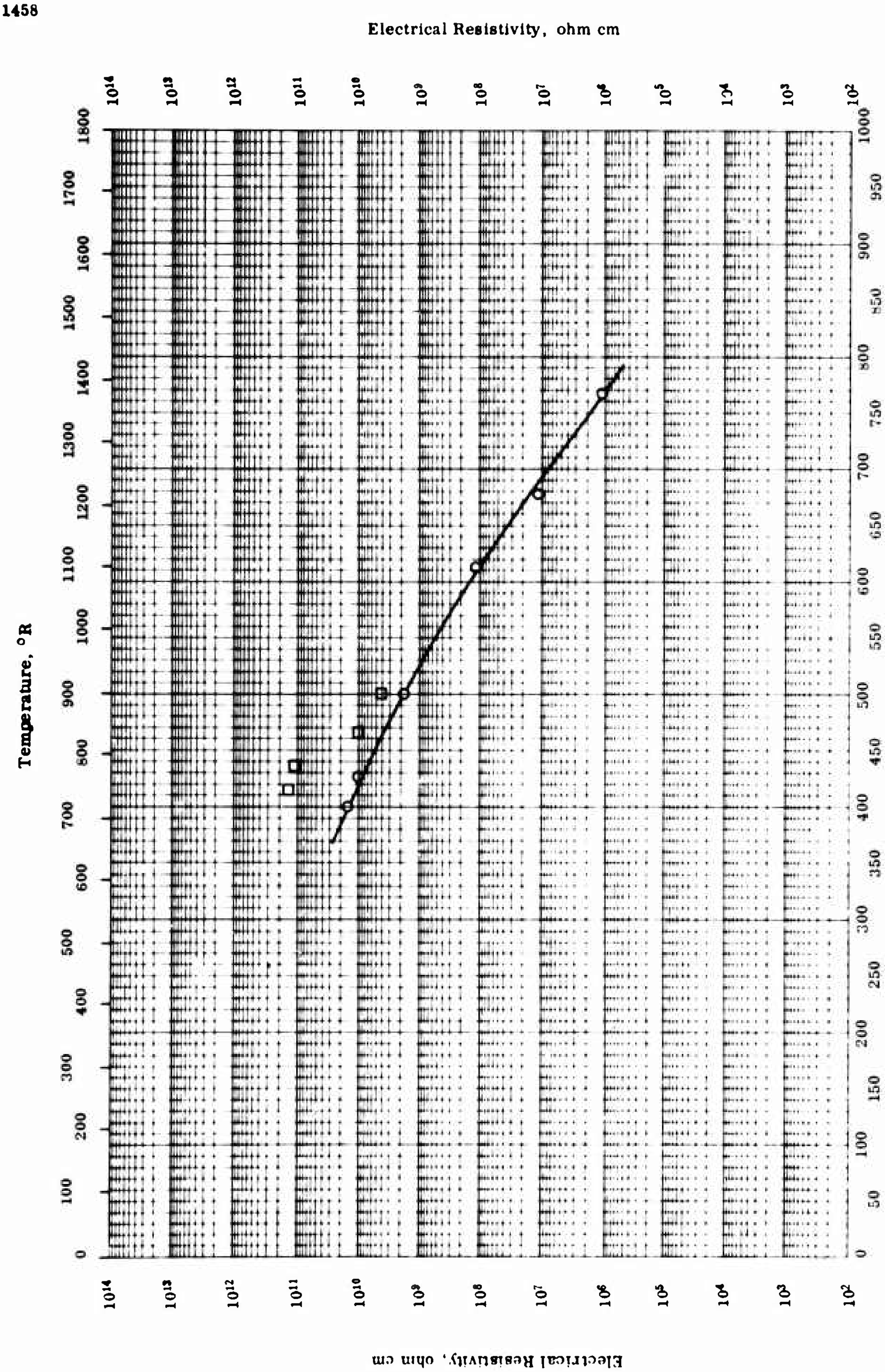
REPORTED VALUES

Density		g cm^{-3}	lb ft^{-3}
	◇	5.11	319
Melting Point		K	R
	○	2323	4182
	□	2293 ± 20	4128 ± 36
	△	2313 ± 20	4164 ± 36

PROPERTIES OF STRONTIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
◇	59-9	298		$SrO \cdot TiO_2$.	
○	57-20	2323		$SrO \cdot TiO_2$.	
□	55-27	227[illegible]-2313		$SrO \cdot TiO_2$.	Presintered at 1100 C and sintered at 1350-1500 C.
△	57-21	2293-2333		$SrO \cdot TiO_2$.	

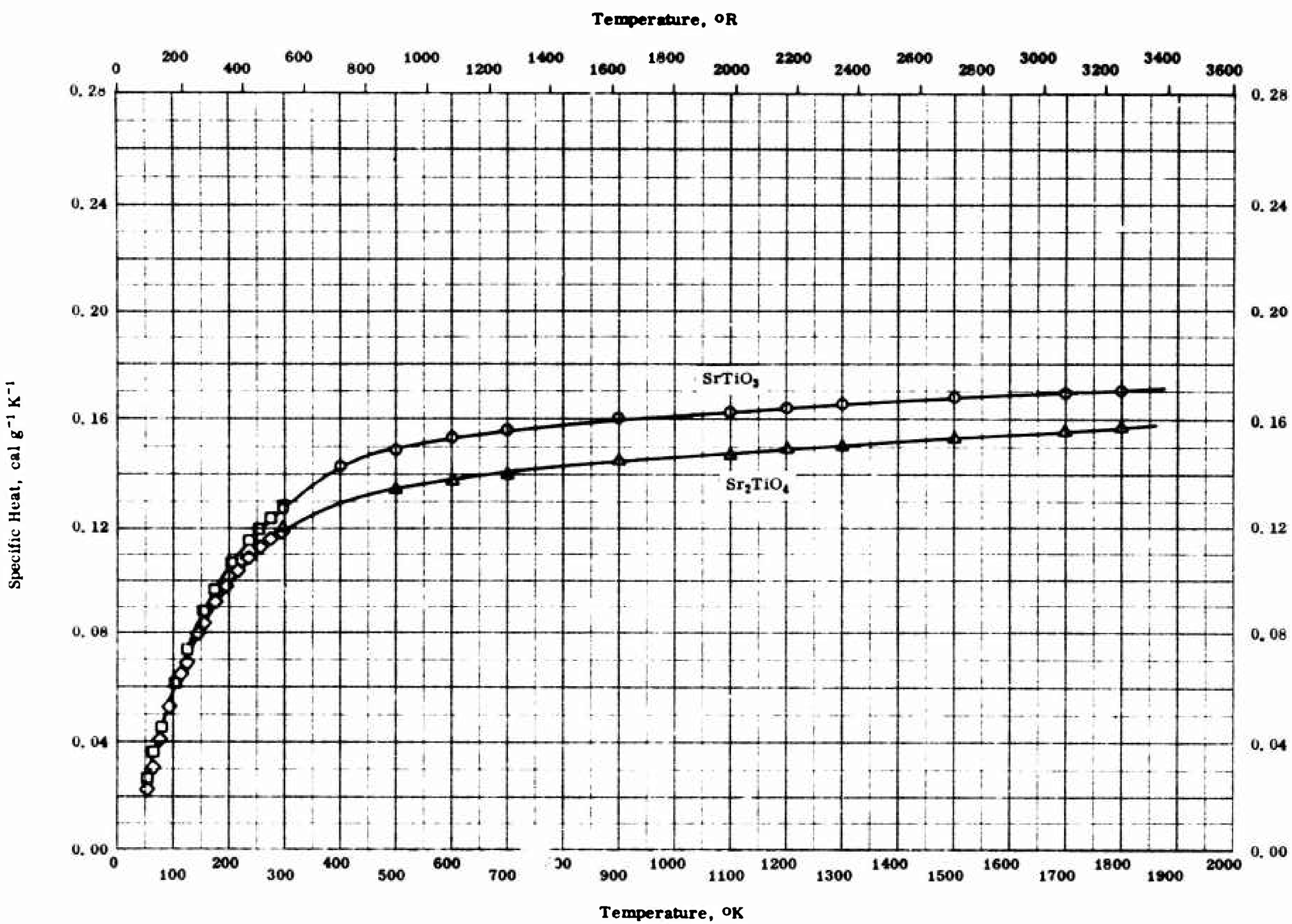


ELECTRICAL RESISTIVITY -- STRONTIUM TITANATE

ELECTRICAL RESISTIVITY -- STRONTIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-15	400-767		$SrO \cdot TiO_2$.	Temp. controlled to ≤0.1 C; meas. in air.
□	56-15	361-500		Same as above.	Temp. controlled to ≤0.1 C; meas. in O_2.

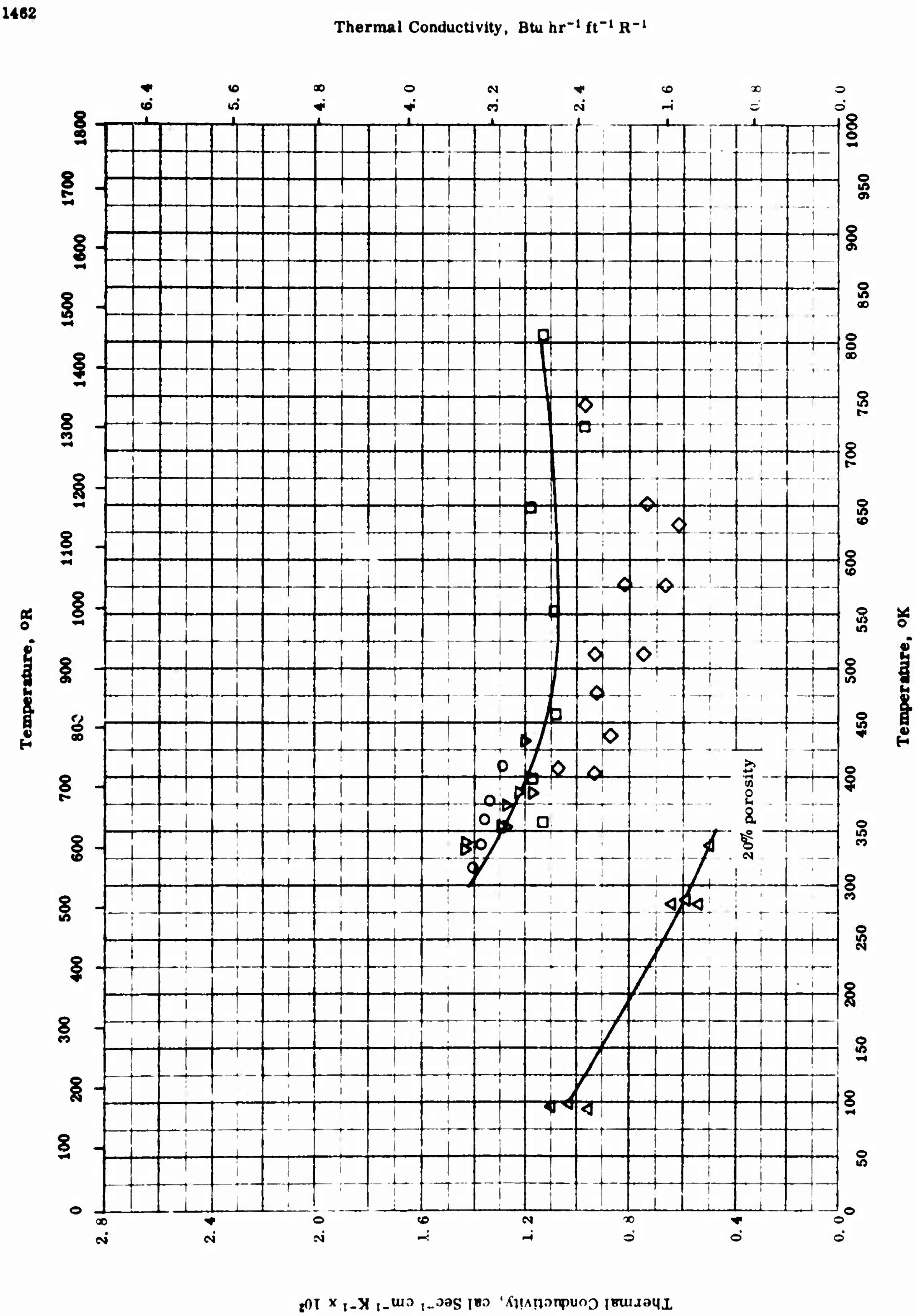


SPECIFIC HEAT -- STRONTIUM TITANATES

SPECIFIC HEAT -- STRONTIUM TITANATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-31	298-1800		Strontium metatitanate, $SrTiO_3$; 99.5 pure.	Prepared from reagent grade strontium carbonate and titania by prolonged heating at 1350 C.
□	52-16	54-298		Strontium metatitanate, $SrTiO_3$; 99.5 pure.	Same as above.
△	53-31	298-1800		Strontium orthotitanate, Sr_2TiO_4; 99.5 Sr_2TiO_4, 0.17 CaO, and 0.03 SiO_2.	
◇	52-19	53-298		Strontium orthotitanate, Sr_2TiO_4; 99.5 Sr_2TiO_4, 0.17 CaO and 0.03 SiO_2.	

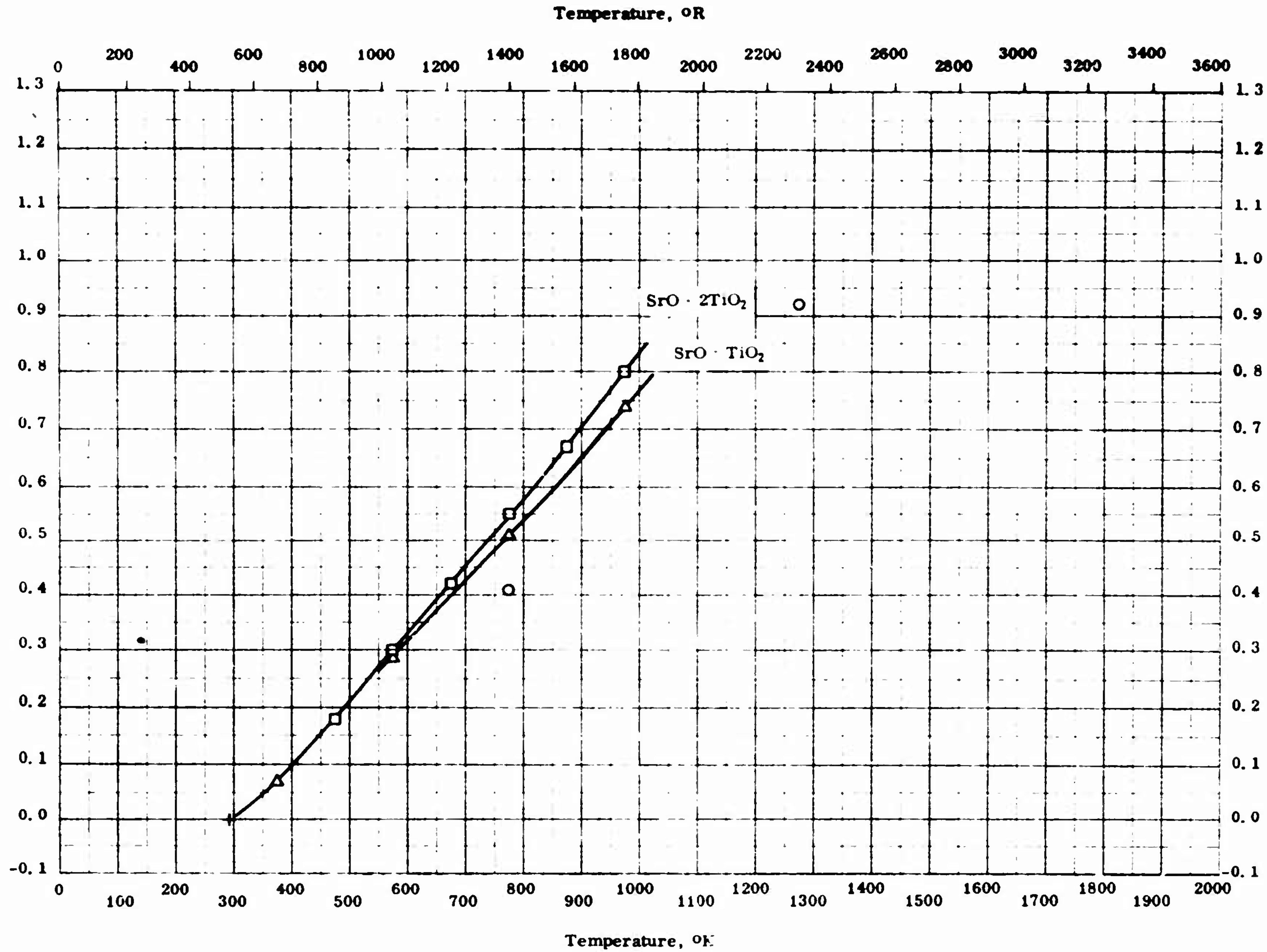


THERMAL CONDUCTIVITY -- STRONTIUM TITANATE

THERMAL CONDUCTIVITY -- STRONTIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-8	316-410	±3	$SrO \cdot TiO_2$.	Test in vacuum.
△	60-2	93-337		$SrO \cdot TiO_2$; powdered SrO and TiO_2 as raw materials; density 4.01 g cm^{-3} and porosity 19.5%.	Pressed and sintered at 1400 C for 8 hrs.
▽	58-4	333-433		$SrO \cdot TiO_2$.	
□	59-2	358-808		Pure $SrO \cdot TiO_2$.	
◇	59-2	403-743		Pure $SrO \cdot TiO_2$.	Second run of the above sampie.

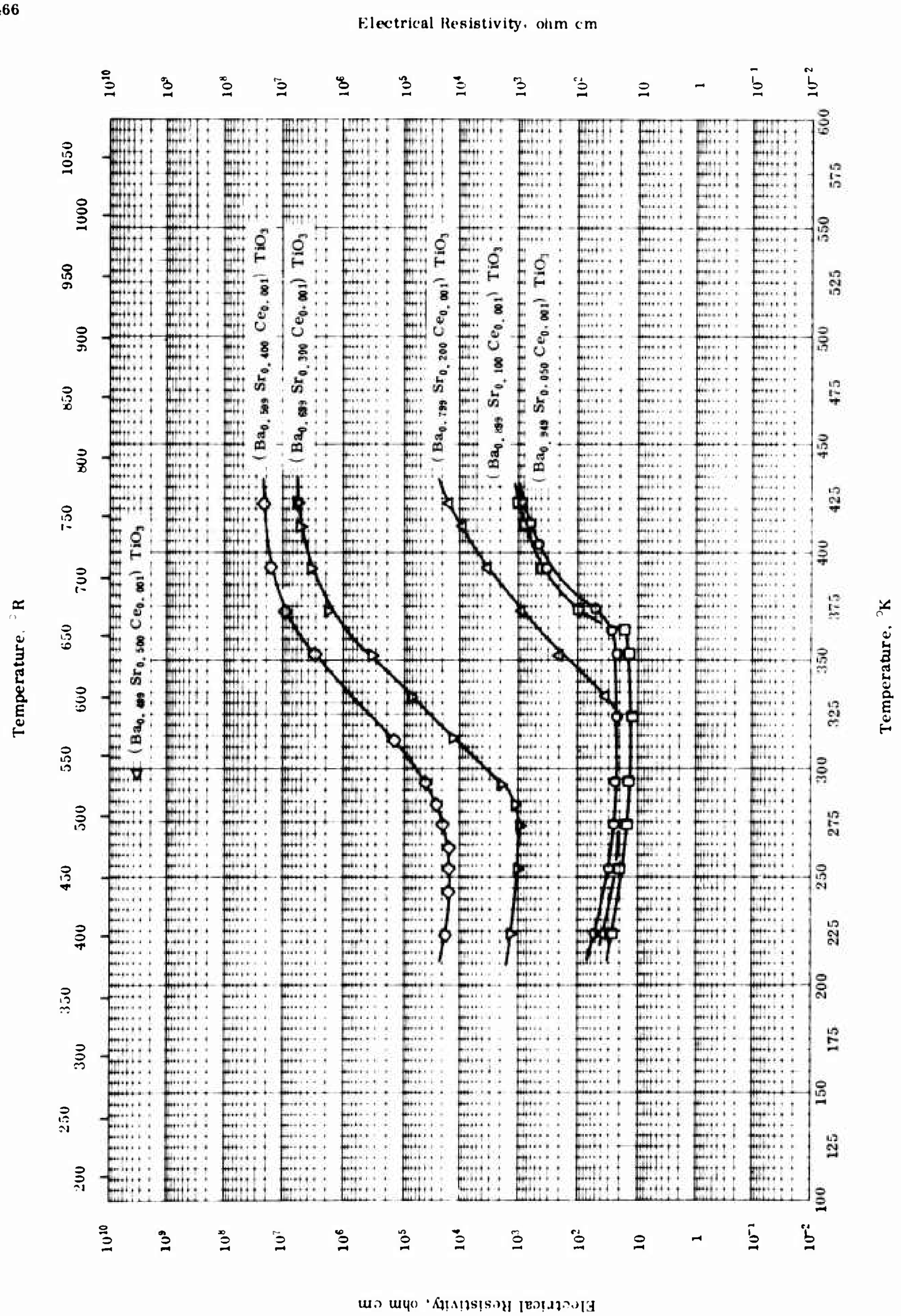


THERMAL LINEAR EXPANSION -- STRONTIUM TITANATES

THERMAL LINEAR EXPANSION -- STRONTIUM TITANATES

REFERENCE INFORMATION

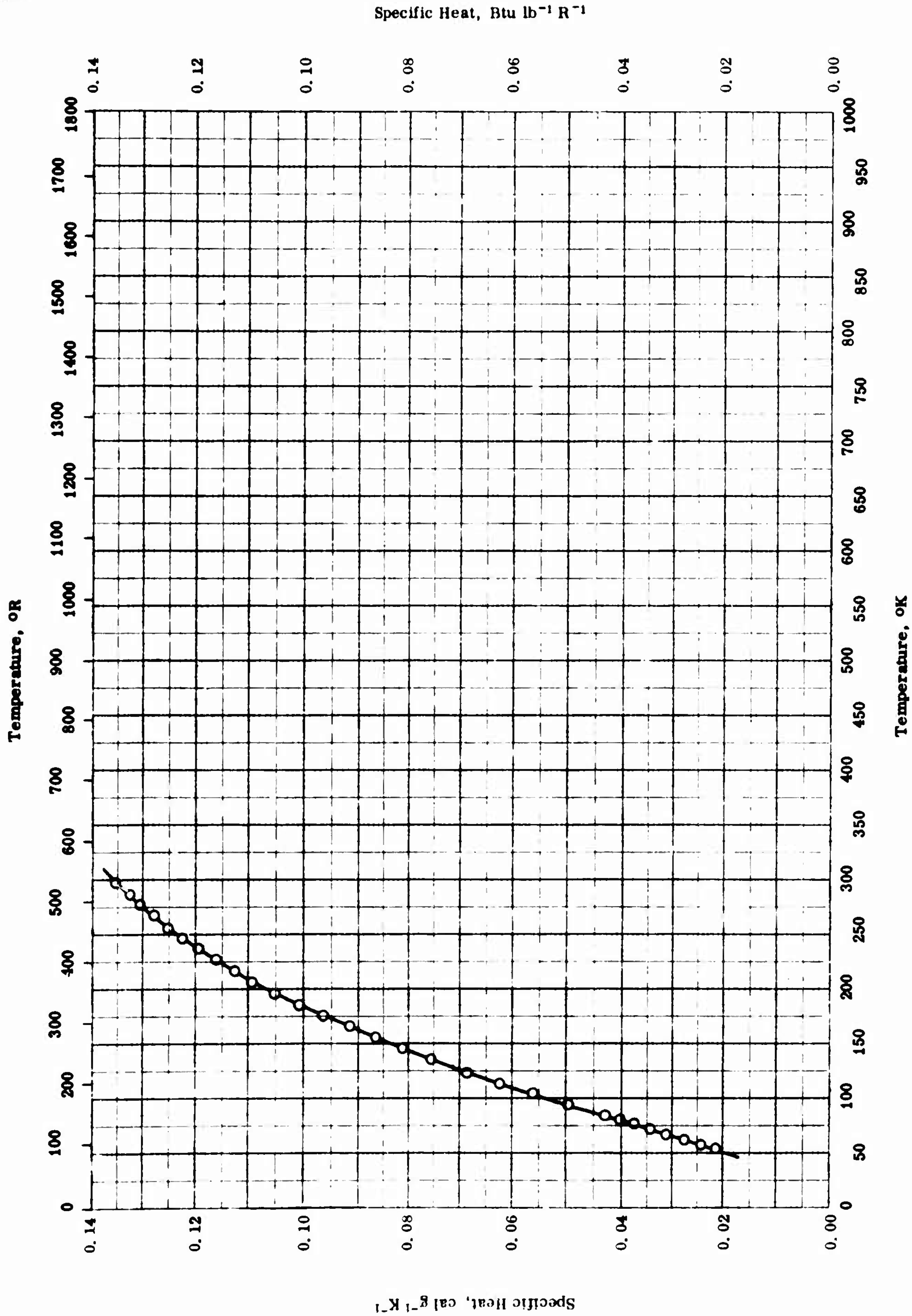
Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	47-6	293-973		$SrO \cdot 2TiO_2$; 60.7 TiO_2 and 39.3 SrO.	Heated 12 hrs at 1100 C and matured 6 hrs at 1250 - 1430 C.
△	47-6	293-973		$SrO \cdot TiO_2$; 43.6 TiO_2 and 56.4 SrO.	Same as above.
○	60-35	298-1273		$SrO \cdot TiO_2$.	


Electrical Resistivity, ohm cm
Temperature, °R
Temperature, °K
$(Ba_{0.499}\,Sr_{0.500}\,Ce_{0.001})\,TiO_3$
$(Ba_{0.599}\,Sr_{0.400}\,Ce_{0.001})\,TiO_3$
$(Ba_{0.699}\,Sr_{0.300}\,Ce_{0.001})\,TiO_3$
$(Ba_{0.799}\,Sr_{0.200}\,Ce_{0.001})\,TiO_3$
$(Ba_{0.899}\,Sr_{0.100}\,Ce_{0.001})\,TiO_3$
$(Ba_{0.949}\,Sr_{0.050}\,Ce_{0.001})\,TiO_3$

ELECTRICAL RESISTIVITY -- STRONTIUM BARIUM CERIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-23	223-423		$(Ba_{0.949}Sr_{0.050}Ce_{0.001})TiO_3$; prepared from 99.99 pure barium titanyl oxalate, 99.99 pure cerium, and 99.9 pure strontium carbonate; grayish blue.	Calcined calculated amount of new materials at 1000 C for 1 hr; crushed to 80 mesh, moistened and pressed with 600 kg-cm^{-2} to disks for 2 mm thick and 20 mm dia., and then fired at 1350-1400 C for 1-2 hrs; equiv water absorption 0.41%.
□	61-23	223-423		$(Ba_{0.899}Sr_{0.100}Ce_{0.001})TiO_3$; same as above; grayish blue.	Same as above; equiv water absorption 0.73%.
△	61-23	223-423		$(Ba_{0.799}Sr_{0.200}Ce_{0.001})TiO_3$; same as above; grayish blue.	Same as above; equiv water absorption 0.75%.
▽	61-23	223-423		$(Ba_{0.699}Sr_{0.300}Ce_{0.001})TiO_3$; same as above; light bluish violet.	Same as above; equiv water absorption 0.77%.
◇	61-23	223-423		$(Ba_{0.599}Sr_{0.400}Ce_{0.001})TiO_3$; same as above; light bluish violet.	Same as above; equiv water absorption 2.60%.
◁	61-23	298		$(Ba_{0.499}Sr_{0.500}Ce_{0.001})TiO_3$; same as above; light pink.	Same as above; equiv water absorption 9.96%.

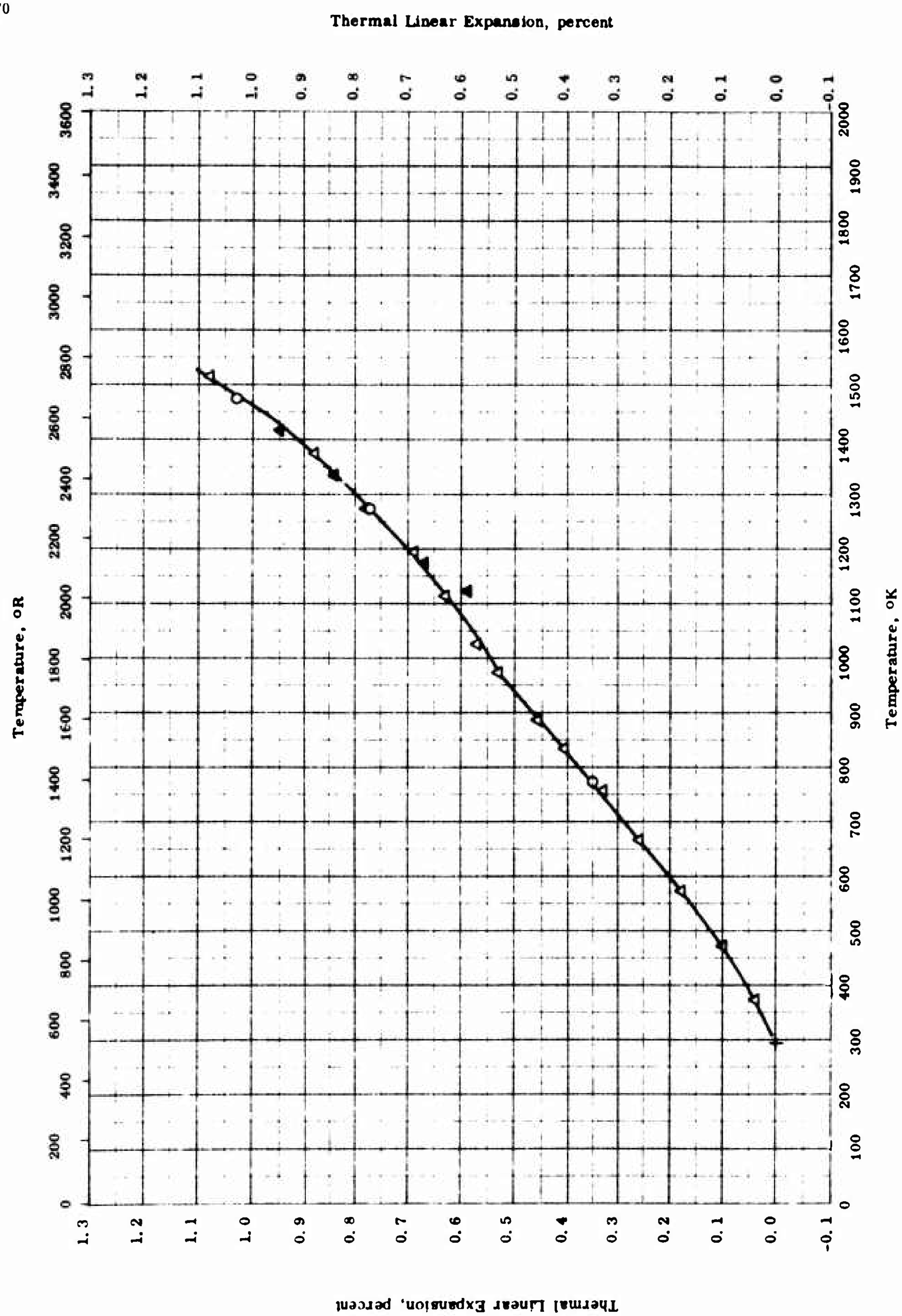


SPECIFIC HEAT -- ZINC ORTHOTITANATE

SPECIFIC HEAT -- ZINC ORTHOTITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-34	53-298		Zinc orthotitanate, Zn_2TiO_4; 67.08 ZnO, 32.86 TiO_2 and 0.05 insoluble in HCl.	Prepared from reagent grade zinc oxide and pure titania; pressed into pellets, heated four times for total of 65 hrs above 1000 C, quenched to room temperature.

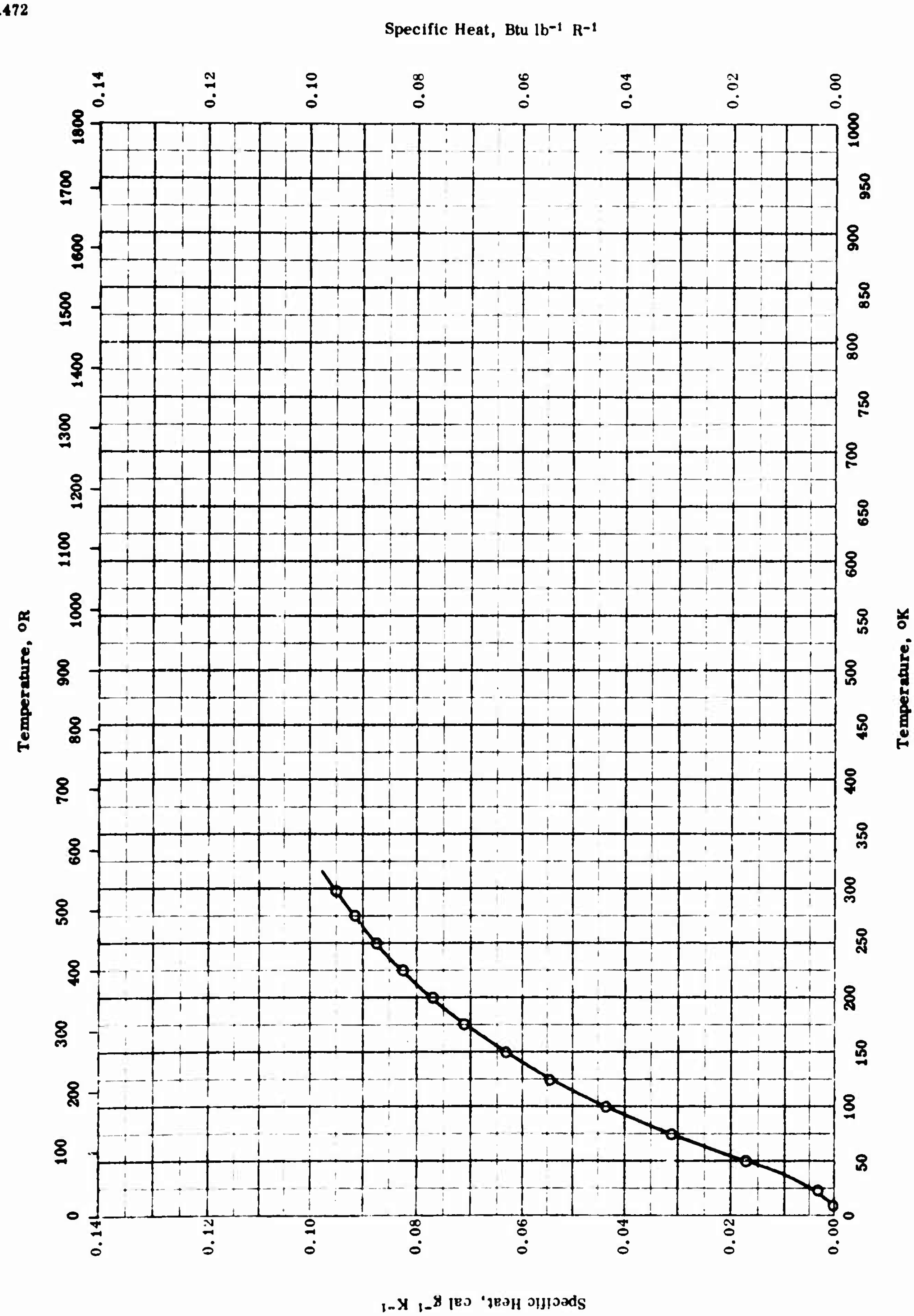


THERMAL LINEAR EXPANSION -- ZIRCONIUM TITANATE

THERMAL LINEAR EXPANSION -- ZIRCONIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-35	298-1473		$ZrO_2 \cdot TiO_2$.	
△	56-31	293-1516		$ZrTiO_4$.	Quenched from 1400 C.
▲	56-31	1123-1516		$ZrTiO_4$.	Cooling cycle for above sample.

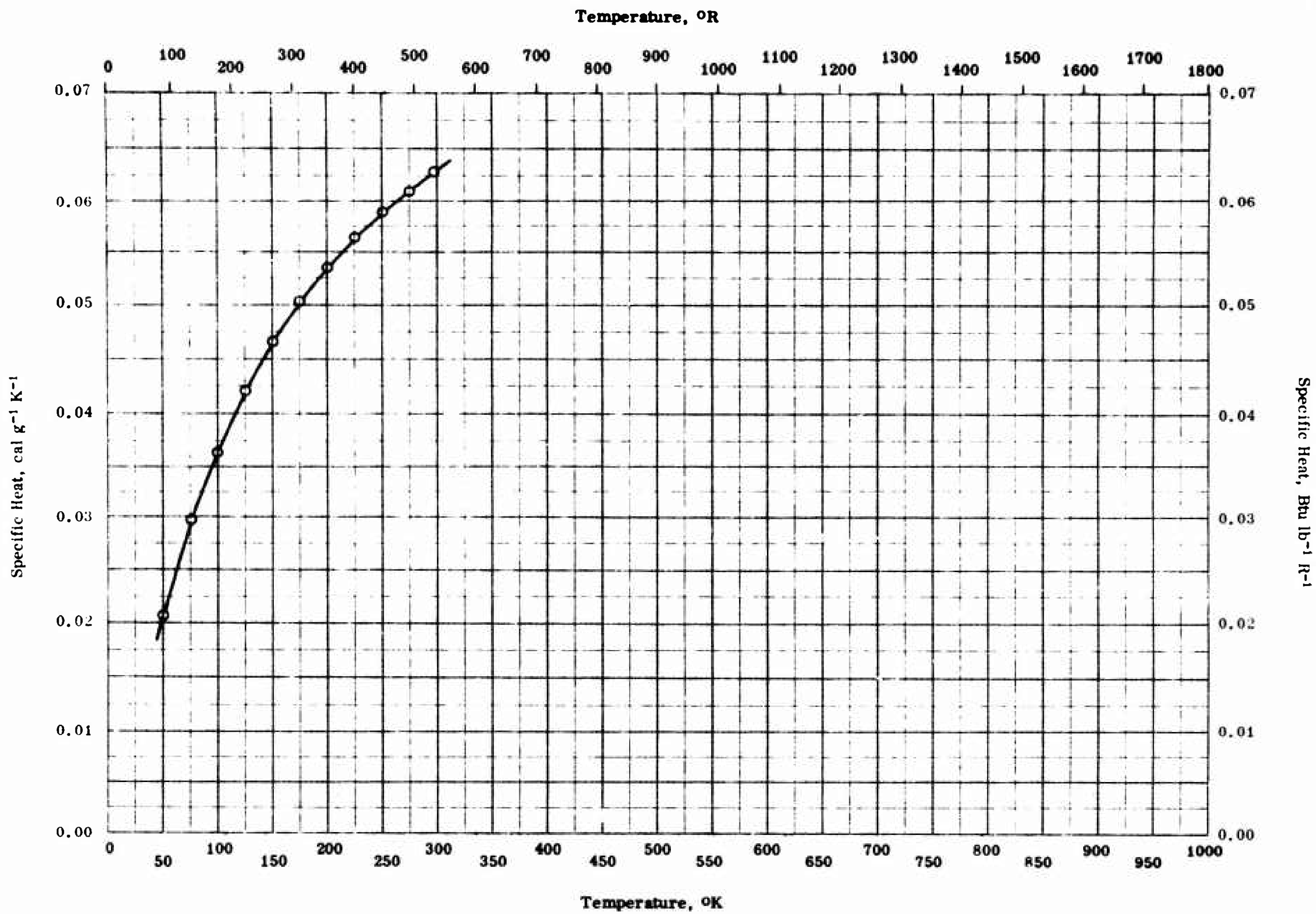


SPECIFIC HEAT -- CALCIUM TUNGSTATE

SPECIFIC HEAT -- CALCIUM TUNGSTATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	61-32	50-298	0.3	CaO · WO_3; 80.59 WO_3 and 19.49 CaO.	Prepared by heating stoichiometric mixture of reagent grade $CaCO_3$ and tungstic acid 7 times for a total of 2 days at 680 C and 10 day at 800 C.

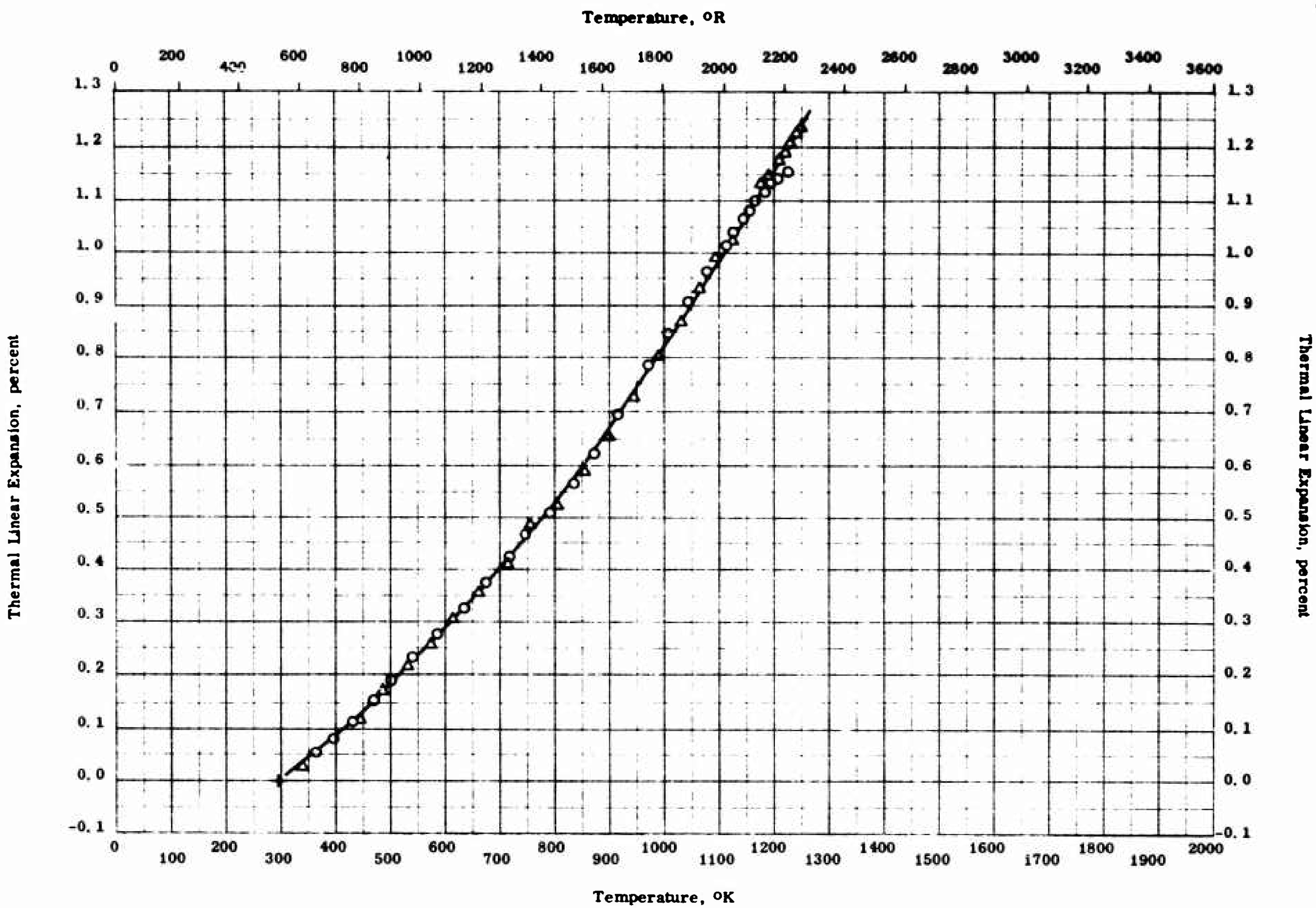


SPECIFIC HEAT -- LEAD TUNGSTATE

SPECIFIC HEAT -- LEAD TUNGSTATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	64-15	50-298	0.3	$PbO \cdot WO_3$; 50.94 WO_2 and 48.94 PbO_2.	Prepared from reagent grade lead carbonate and tungstic acid with stoichrometric mixture heated several days at 600 C and several days at 700 C.

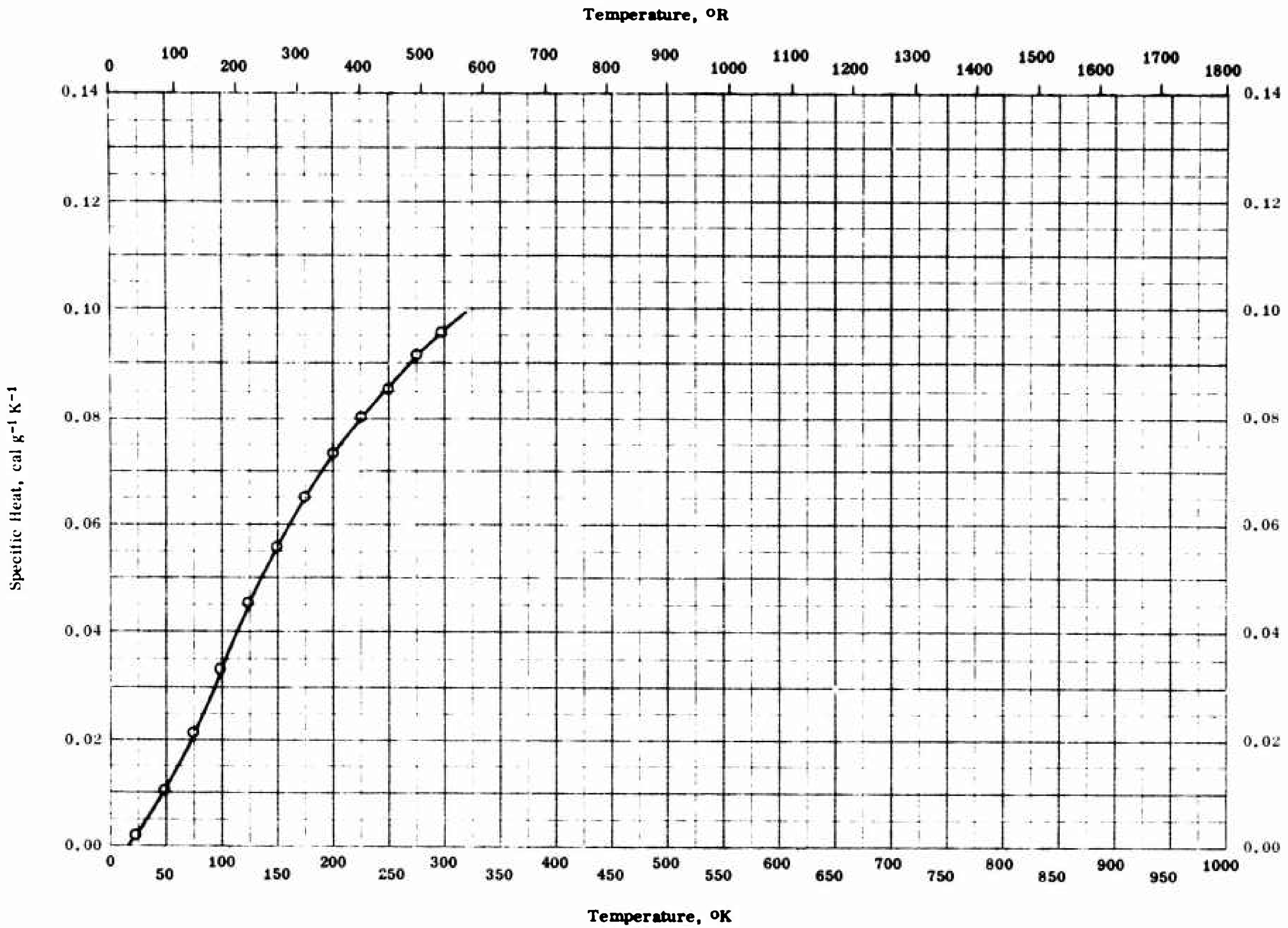


THERMAL LINEAR EXPANSION -- LEAD TUNGSTATE

THERMAL LINEAR EXPANSION -- LEAD TUNGSTATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-38	298-1225		PbO. WO_3; calculated composition 49.05 PbO and 50.95 WO_3; prepared from c.p. chemicals; original length 99 mm.	Hand mixed with acetone for 15 to 20 min, air dried, heated slowly to 300 C for 4 hrs, remixed, calcined at 850 C for 24 hrs, cooled, remixed, recalcined at 1000 C for 24 hrs, ground, mixed with Carbowax solution, nodulized through a 20-mesh sieve, pressed into 10 by 1 by 1 cm bar at 1000 psi, and fired slowly to 1000 C for 6 hrs; measured with heating rate of 120 C hr^{-1}.
△	63-38	298-1249		Same as above.	Second run for above sample.

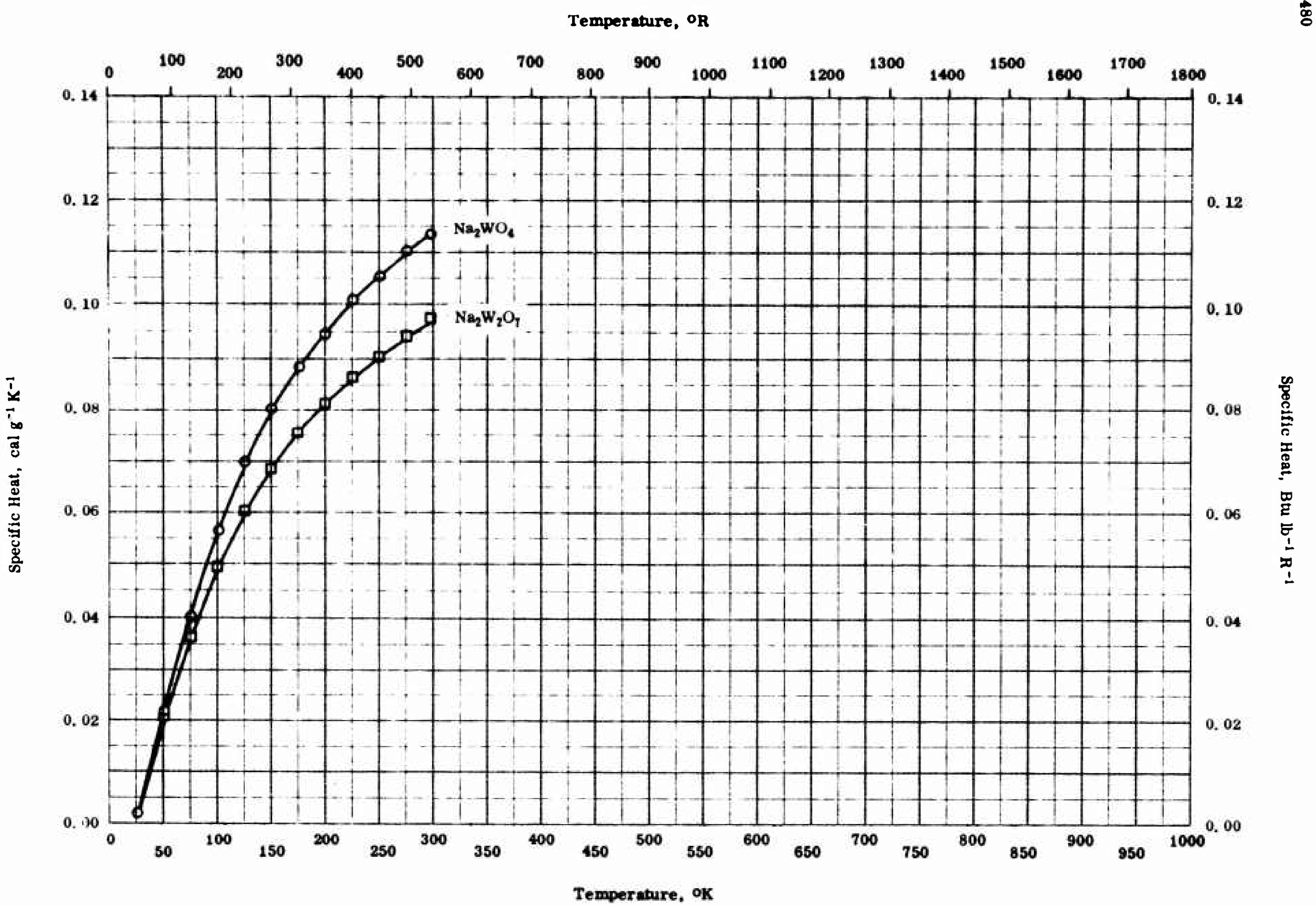


SPECIFIC HEAT -- MAGNESIUM TUNGSTATE

SPECIFIC HEAT -- MAGNESIUM TUNGSTATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-32	50-298	0.3	$MgO \cdot WO_3$; 85.24 WO_3 and 14.79 MgO.	Prepared by heating stoichiometric mixture of reagent grade magnesia and tungstic acid 8 times for a total of 5 days at 900 C.



SPECIFIC HEAT -- SODIUM TUNGSTATES

SPECIFIC HEAT -- SODIUM TUNGSTATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-15	50-298	0.3	Sodium monotungstate, $Na_2O \cdot WO_3$; 78.95 WO_3.	Prepared by melting twice stoichiometric mixture of reagent grade Na_2CO_3 and tungstic acid; heated 4 times for a total of 4.5 days at 460 - 600 C.
□	63-31	50-298	0.3	Sodium ditungstate, $Na_2O \cdot 2WO_3$; 87.78 WO_3, 11.74 Na_2O, 0.24 Al_2O_3 and 0.24 SiO_2.	

PROPERTIES OF URANATES

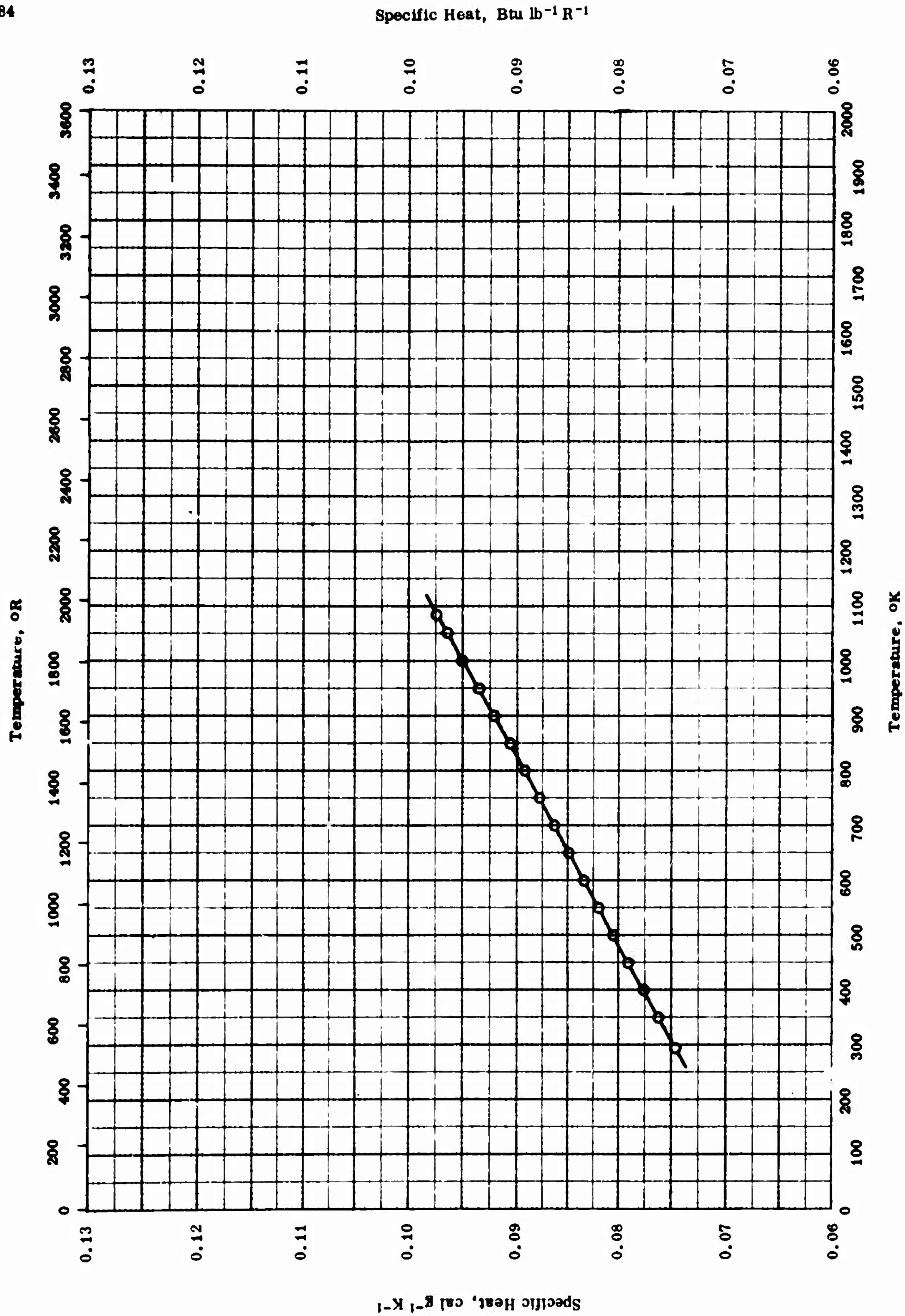
REPORTED VALUES

Melting Point	K	R
○ $Li_2O \cdot UO_3$	1638 ± 10	2950 ± 18
□ $Na_2O \cdot UO_3$	1908 ± 10	3430 ± 18
△ $K_2O \cdot UO_3$	1893 ± 10	3410 ± 18
◇ $MgO \cdot UO_3$	2023 ± 25	3640 ± 45
▽ $MgO \cdot UO_3$	1973 ± 25	3550 ± 45
◁ $MgO \cdot UO_3$	1813 ± 25	3260 ± 45
▷ $CaO \cdot UO_3$	2070 ± 10	3730 ± 18
● $CaO \cdot UO_3$	2070 ± 10	3730 ± 18
■ $CaO \cdot UO_3$	1888 ± 35	3400 ± 63
▲ $SrO \cdot UO_3$	2070 ± 25	3730 ± 45
▼ $SrO \cdot UO_3$	1928 ± 10	3470 ± 18
◀ $SrO \cdot UO_3$	1608 ± 25	2890 ± 45
▶ $BaO \cdot UO_3$	1730 ± 10	3110 ± 18
◆ $2\ NaO \cdot UO_3 \cdot P_2O_5$	≈1220	≈2196

PROPERTIES OF URANATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-27	1628-1648		$Li_2O \cdot UO_3$.	In air medium.
□	56-27	1898-1918		$Na_2O \cdot UO_3$.	In air medium.
△	56-27	1883-1903		$K_2O \cdot UO_3$.	In air medium.
◇	56-27	1998-2048		$MgO \cdot UO_3$.	In air medium; decomposed.
▽	56-27	19[illegible]8-1998		$MgO \cdot UO_3$.	In O_2 medium; decomposed.
◁	56-27	1788-1838		$MgO \cdot UO_3$.	In He medium; decomposed.
▷	56-27	2060-2080		$CaO \cdot UO_3$.	In air medium.
●	56-27	2060-2080		$CaO \cdot UO_3$.	In O_2 medium.
■	56-27	1853-1923		$CaO \cdot UO_3$.	In He medium; decomposed.
▲	56-27	2045-2095		$SrO \cdot UO_3$.	In air medium; some decomposed.
▼	56-27	1918-1938		$SrO \cdot UO_3$.	In O_2 medium.
◀	56-27	1583-1633		$SrO \cdot UO_3$.	In He medium; decomposed.
▶	56-27	1720-1740		$BaO \cdot UO_3$.	Appear to melt.
◆	56-27	1220		$2\ NaO \cdot UO_3 \cdot P_2O_5$.	

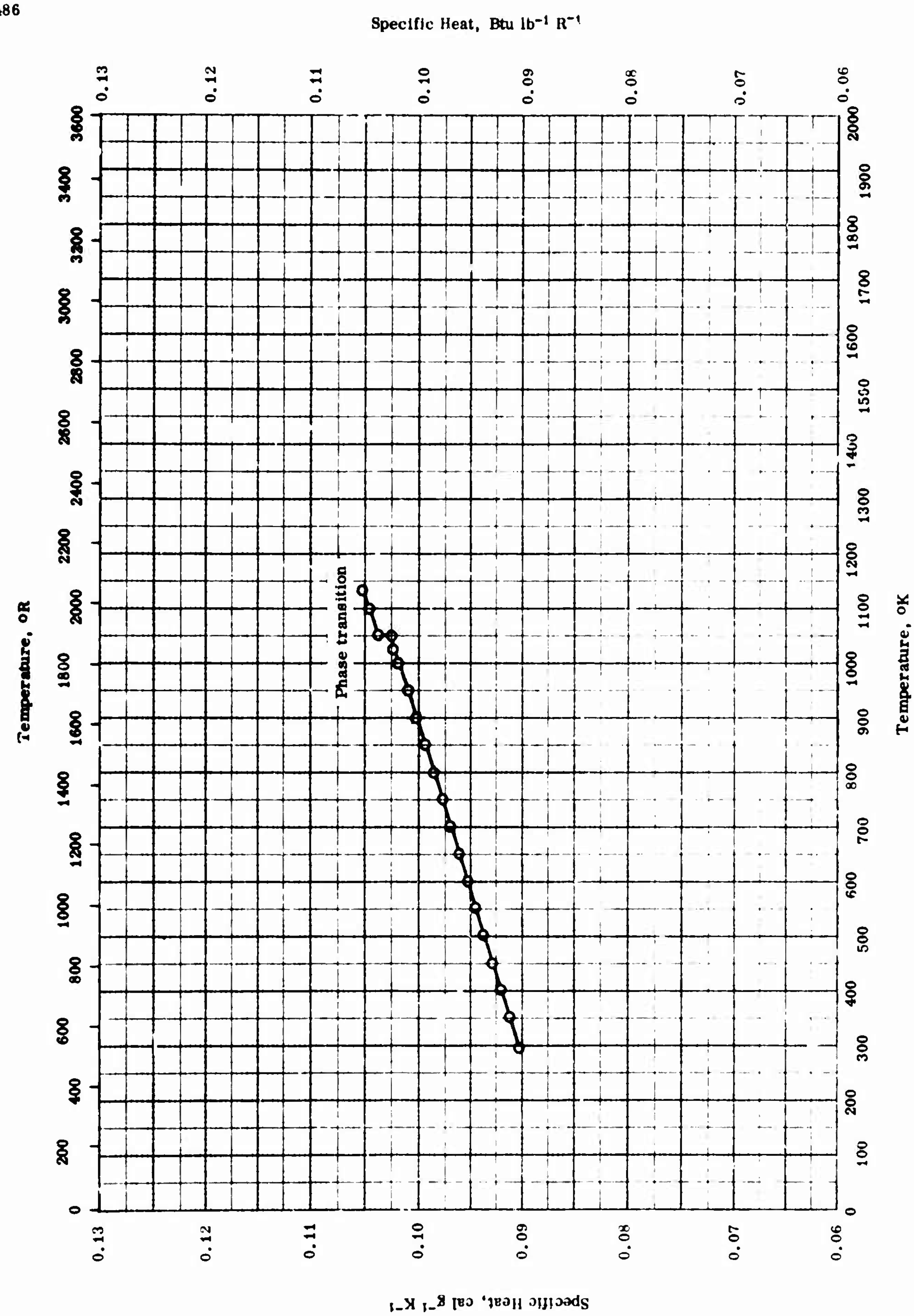


SPECIFIC HEAT -- BARIUM URANATE

SPECIFIC HEAT -- BARIUM URANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-34	293-1084	0.1	BaO · UO_3; 53.95 U and 31.10 Ba.	

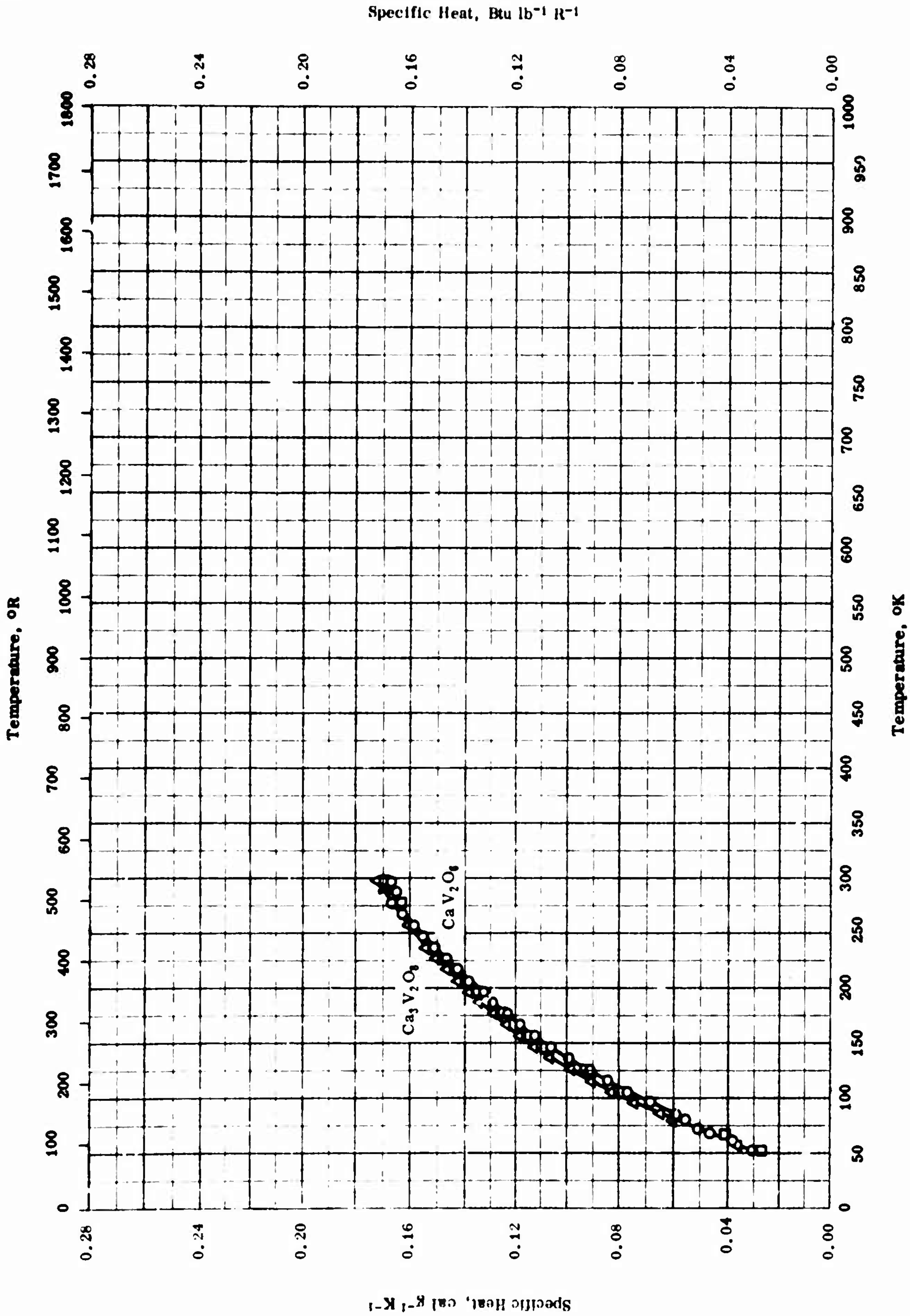


SPECIFIC HEAT -- CALCIUM URANATE

SPECIFIC HEAT -- CALCIUM URANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-34	293-1134	0.1	$CaO \cdot UO_3$; 69.4 U and 11.41 Ca.	

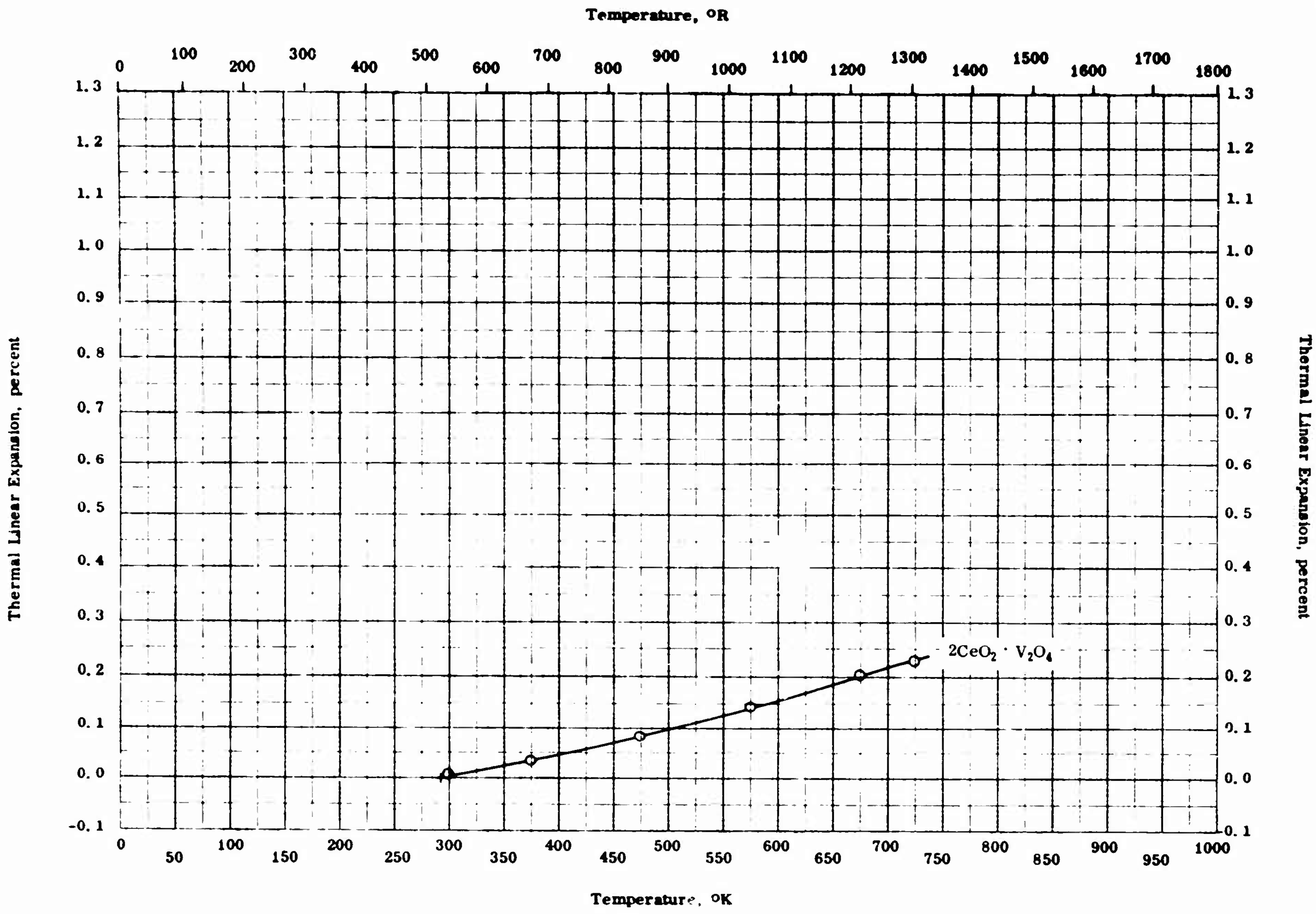


SPECIFIC HEAT -- CALCIUM VANADATES

SPECIFIC HEAT -- CALCIUM VANADATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specification	Remarks
○	61-35	52-295	0.3	Calcium metavanadate, $CaO \cdot V_2O_5$; 76.32 V_2O_5 and 23.48 CaO.	Prepared by heating stoichiometric mixture of reagent grade calcium carbonate and vanadium pentoxide 17 days at 610 - 660 C.
□	61-35	52-296	0.3	Calcium pyrovanadate, $2CaO \cdot V_2O_5$; 61.78 V_2O_5 and 38.08 CaO.	Prepared by heating stoichometric mixture of the oxides 28 hrs at 600 - 670 C.
△	61-35	52-296	0.3	Calcium orthovanadate, $3CaO \cdot V_2O_5$; 52.00 V_2O_5 and 48.01 CaO.	Prepared by heating stoichrometric oxide mixture 3700 hrs at 400 C and 16 hrs at 1,000 C.

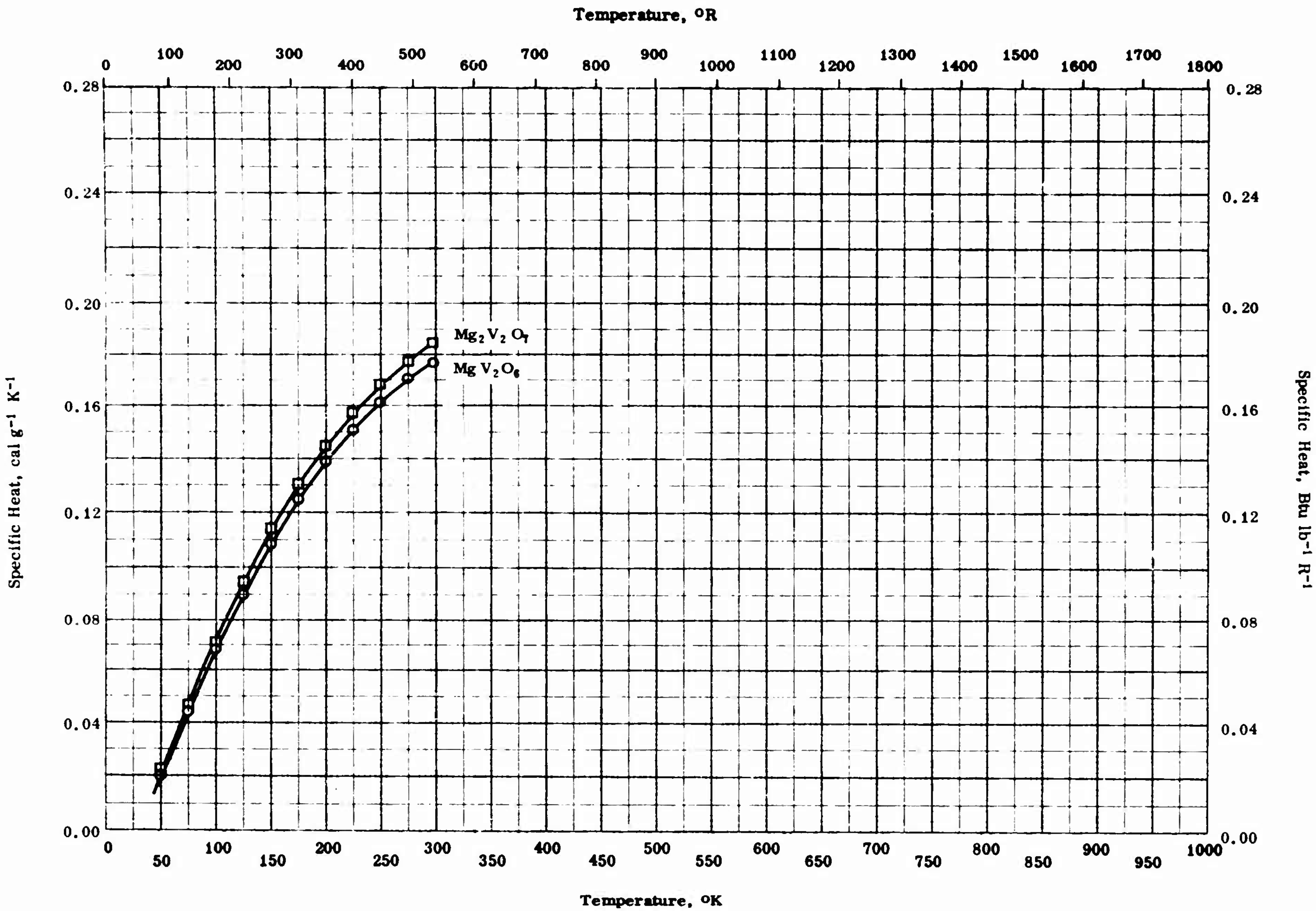


THERMAL LINEAR EXPANSION -- CERIUM VANADATE

THERMAL LINEAR EXPANSION -- CERIUM VANADATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-18	317-723		$2CeO_2 \cdot V_2O_4$.	Heated to 1090 - 1200 C.



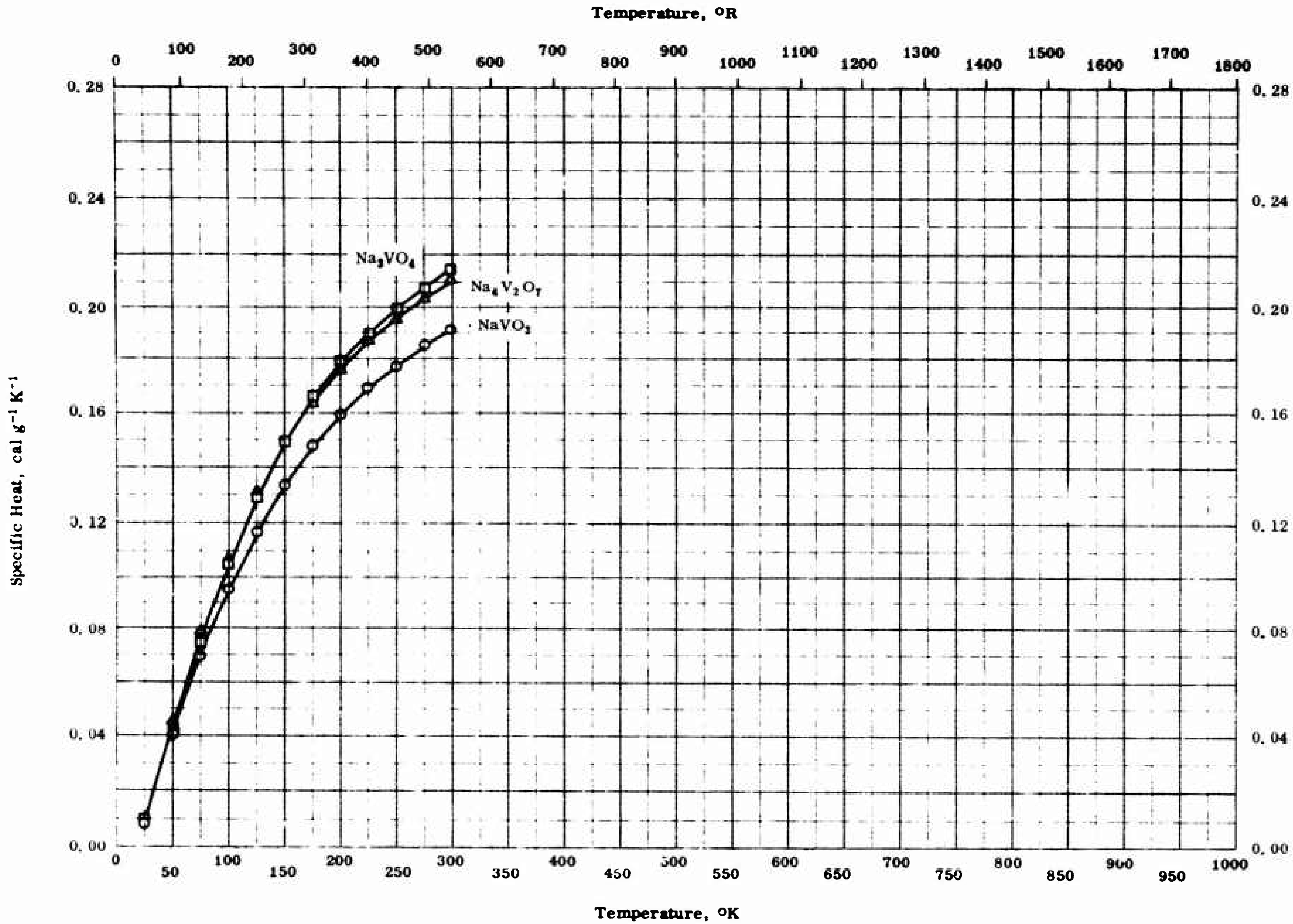
SPECIFIC HEAT -- MAGNESIUM VANADATE

SPECIFIC HEAT -- MAGNESIUM VANADATE

SPECIFIC HEAT -- MAGNESIUM VANADATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	62-27	50-298	0.3	Magnesium metavanadate, $MgO \cdot V_2O_5$; 99.9 pure.	
□	62-27	50-298	0.3	Magnesium pyrovanadate, $2\,MgO \cdot V_2O_5$; 99.9 pure.	

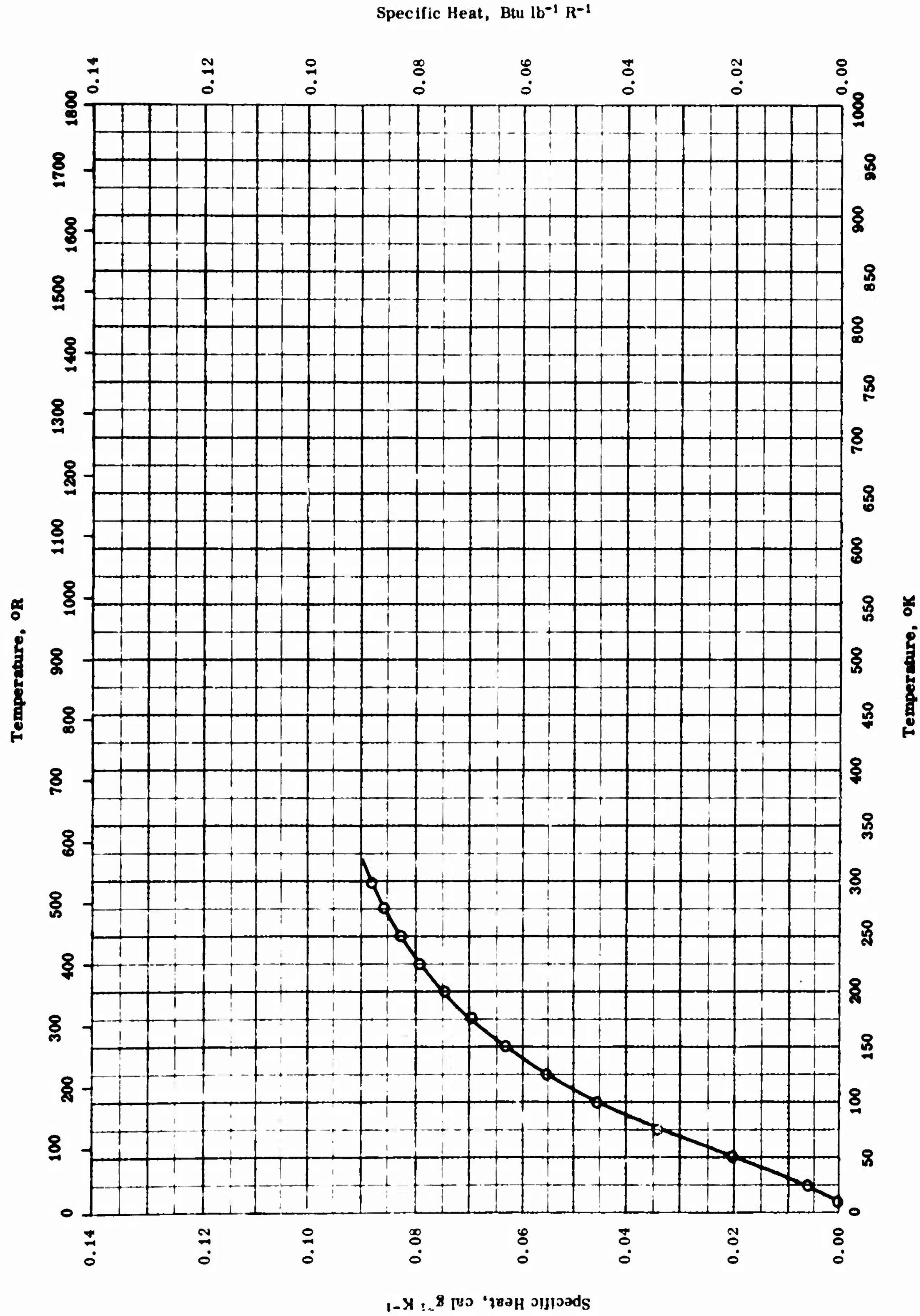


SPECIFIC HEAT -- SODIUM VANADATES

SPECIFIC HEAT -- SODIUM VANADATES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-34	50-298	0.3	Sodium metavanadate; 99.8 $NaVO_3$.	Heat 3 hrs at 500 C.
□	61-34	50-298	0.3	Sodium orthovanadate; 99.8 Na_3VO_4.	Heated 5 hrs at 725 C.
△	61-34	50-298	0.3	Sodium pyrovanadate; 99.8 $Na_4V_2O_7$.	Heated 5 hrs at 500 C.

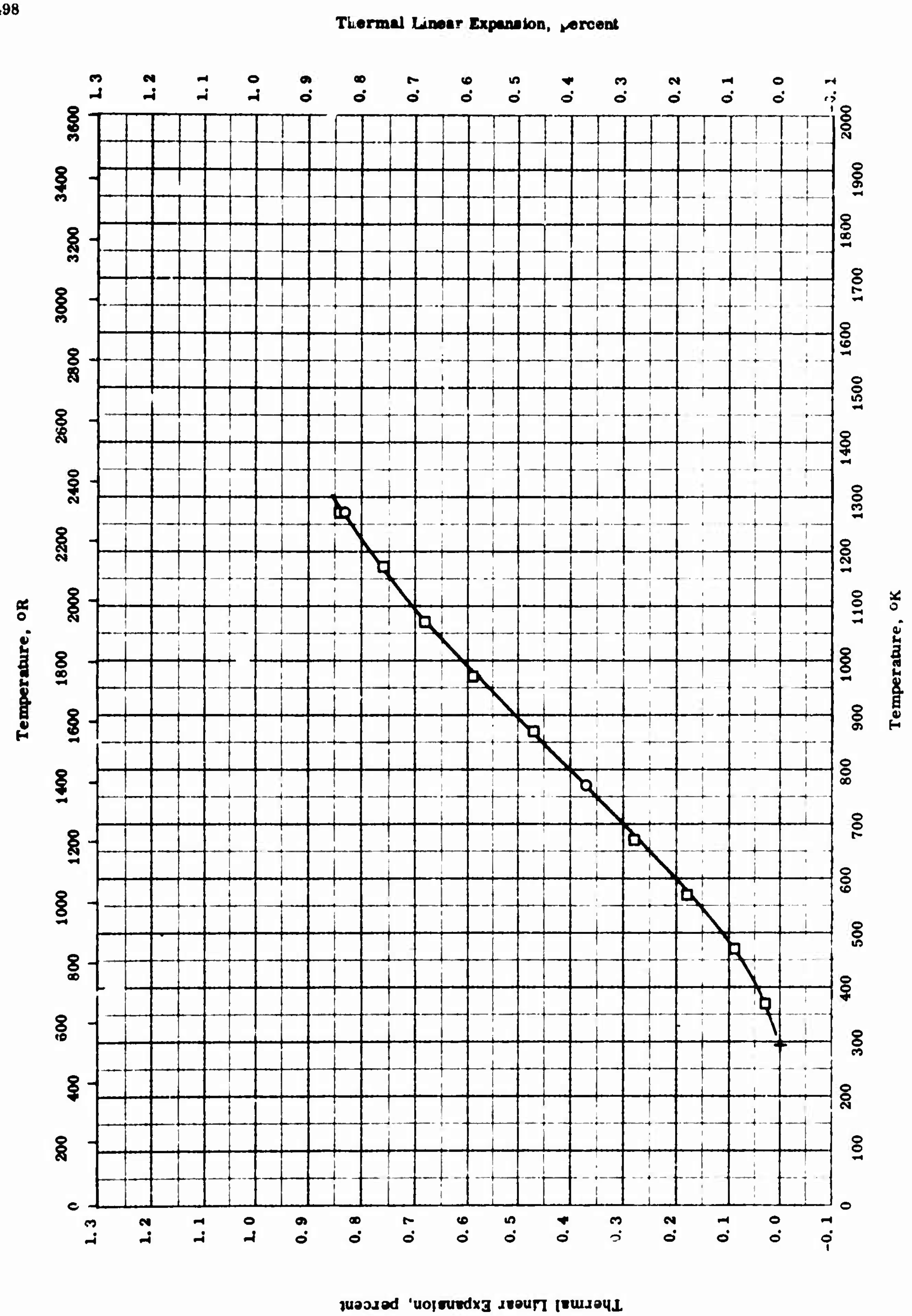


SPECIFIC HEAT -- BARIUM ZIRCONATE

SPECIFIC HEAT -- BARIUM ZIRCONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-35	10-298	0.3	$BaO \cdot ZrO_2$; 55.40 BaO and 44.63 ZrO_2.	Prepared by heating reagent grade barium carbonate and pure zirconia 24 hrs at 1000 C, 6 hrs at 1350 - 1400 C, 20 hrs at 1350 - 1470 C, and 12 hrs at 1300 - 1350 C.

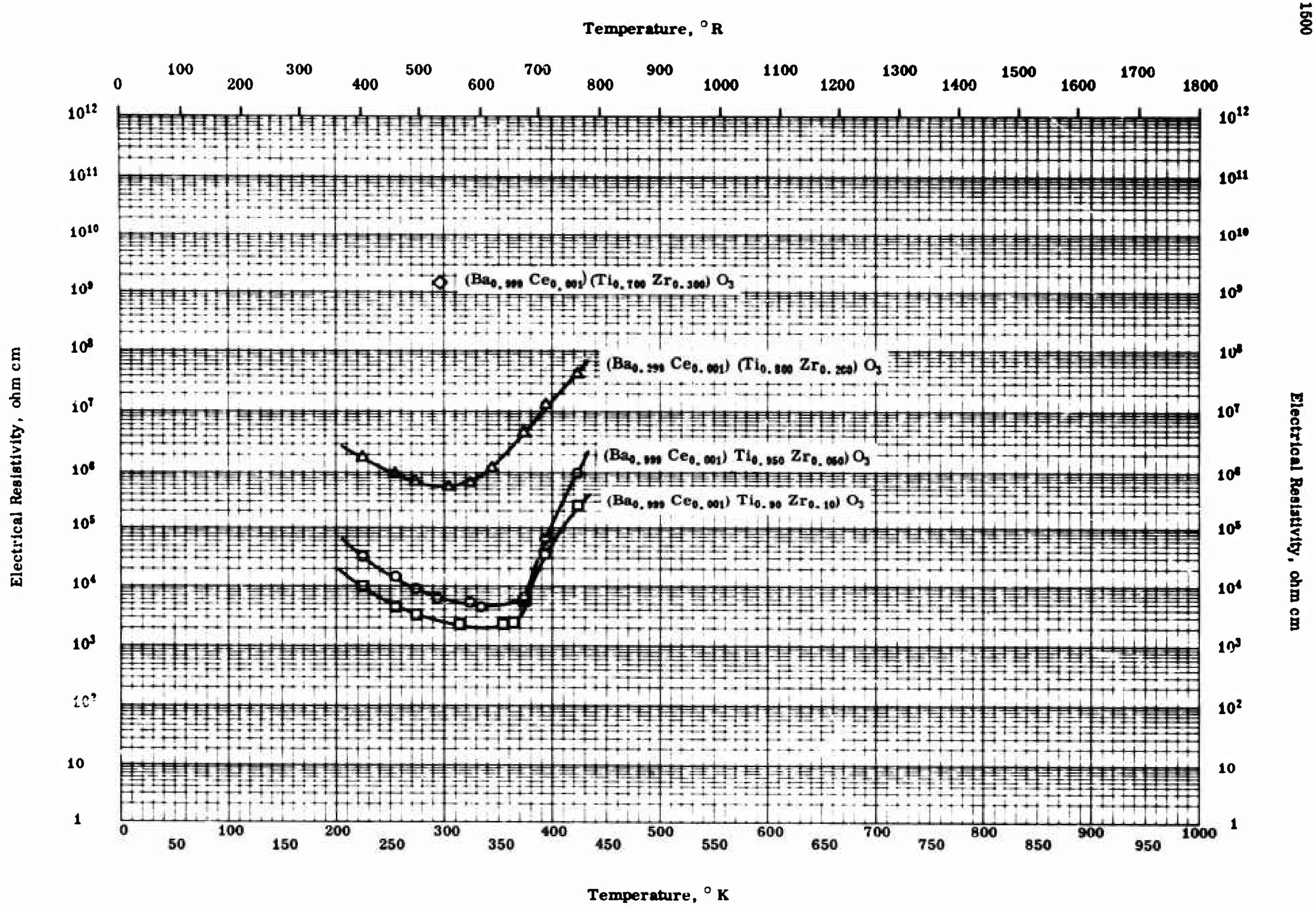


THERMAL LINEAR EXPANSION -- BARIUM ZIRCONATE

THERMAL LINEAR EXPANSION -- BARIUM ZIRCONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-35	298-1273		$BaO \cdot ZrO_2$.	
□	48-7	373-1273		$BaO \cdot ZrO_2$.	Fired 1 hr at 1350 C.



ELECTRICAL RESISTIVITY -- BARIUM CERIUM TITANATE ZIRCONATE

ELECTRICAL RESISTIVITY -- BARIUM CERIUM TITANATE ZIRCONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-23	223-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.950}Zr_{0.050})O_3$; prepared from barium titanyl oxalate, cerium oxalate, titanium dioxide (all 99.99 purity), and 98.99 pure ZrO_2; light grayish blue.	Calcined stoichiometric amount of raw materials at 1000 C for 1 hr, crushed to 80 mesh, moistened and pressed with 600 $kg\text{-}cm^{-2}$ to disks of 2 mm thick and 20 mm dia., fired at 1350-1400 C for 1-2 hrs; equivalent water absorption= 1.49%.
□	61-23	223-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.900}Zr_{0.100})O_3$; same as above; light grayish blue.	Same as above; equivalent water absorption =0.58%.
△	61-23	223-423		$(Ba_{0.999}Ce_{0.001})(Ti_{0.800}Zr_{0.200})O_3$; same as above; light grayish blue.	Same as above; equivalent water absorption= 2.62%.
◇	61-23	298		$(Ba_{0.999}Ce_{0.001})Ti_{0.700}Zr_{0.300})O_3$; same as above; ivory.	Same as above; equivalent water absorption= 13.14%.

PROPERTIES OF CALCIUM ZIRCONATE

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density	4.6	290
Melting Point	2603	4686

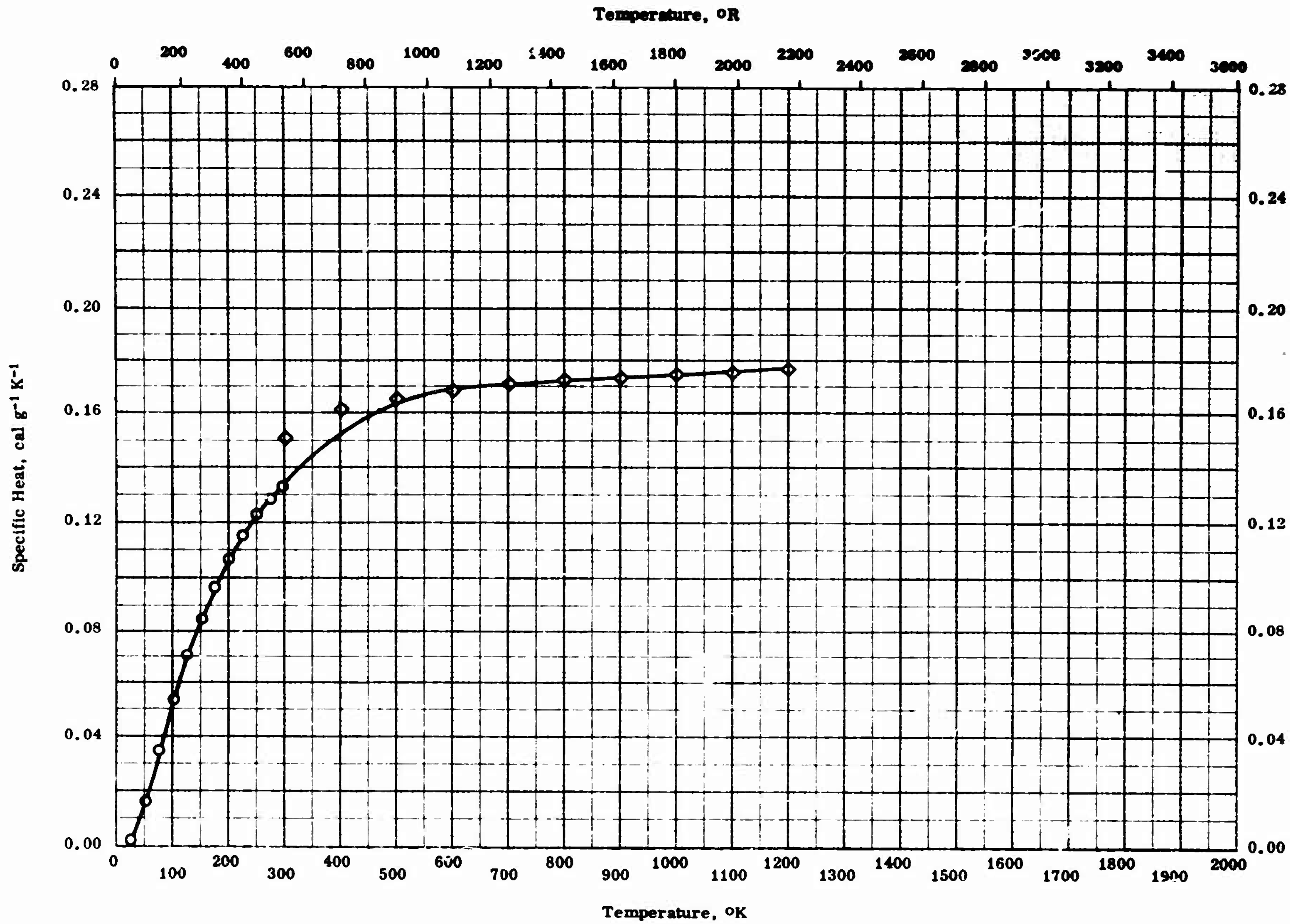
REPORTED VALUES

Density		$g\ cm^{-3}$	$lb\ ft^{-3}$
	○	4.509	281.5
	□	4.460	278.4
	△	4.66	291
Melting Point		K	R
	▽	2603	4686

PROPERTIES OF CALCIUM ZIRCONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-26	298		$CaO \cdot ZrO_2$; made from ZrO_2 (0.097 Si, 0.043 Ti, 0.030 Fe, and 0.020 Mg) and $CaCO_3$ (0.16 Mg and 0.001 Fe).	Mixed from equal moles of ZrO_2 and $CaCO_3$, pressed at 10,000 psi, and fired at 1750 C.
□	53-26	298		Same as above.	Same as above except fired at 1850 C.
△	55-23	298		99 $CaO \cdot ZrO_2$ and 0.08 Mg.	Mixed from equal moles of ZrO_2 and $CaCO_3$; fired 1 hr at 1850 C.
▽	55-23	2603		Same as above.	Same as above.

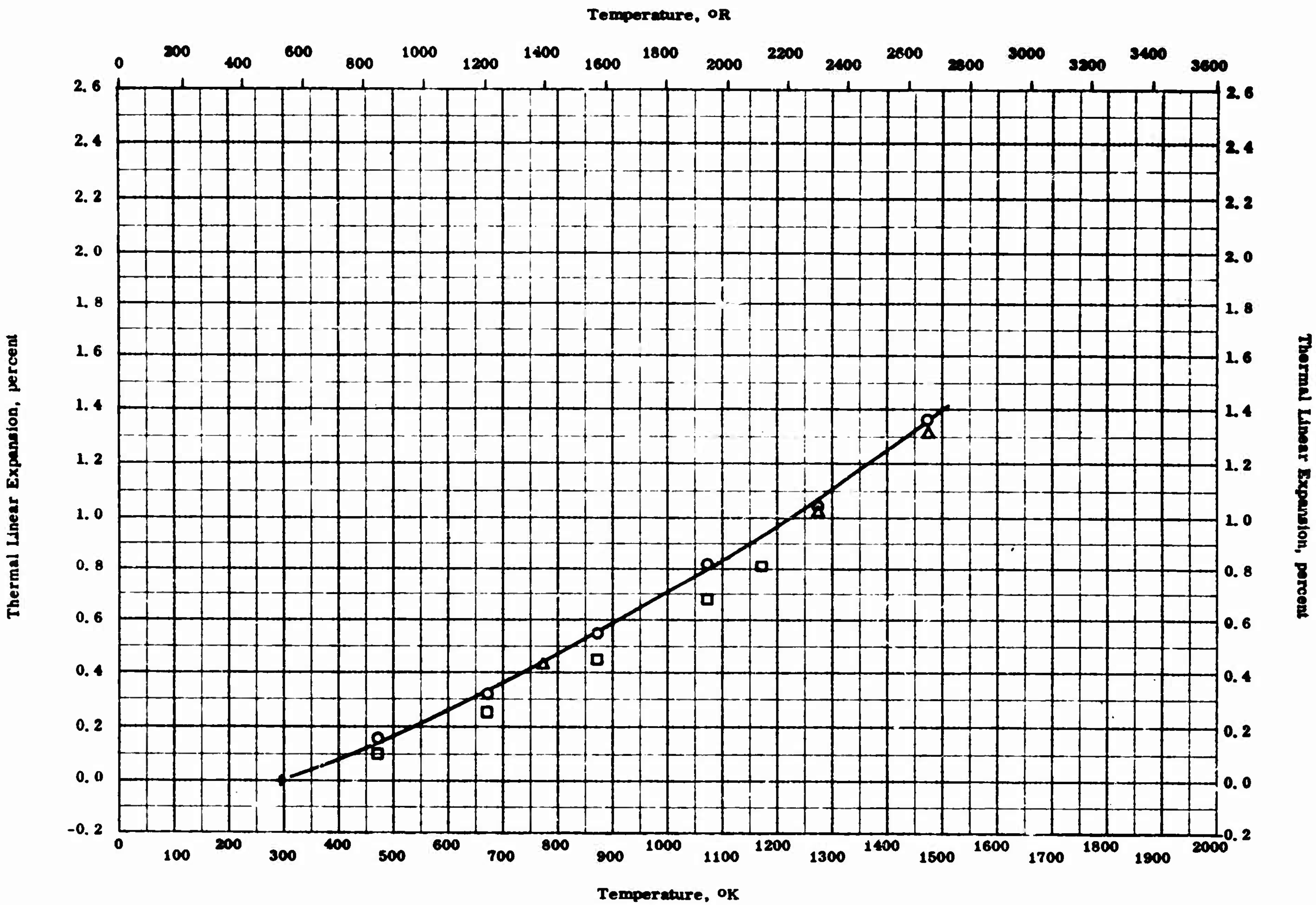


SPECIFIC HEAT -- CALCIUM ZIRCONATE

SPECIFIC HEAT -- CALCIUM ZIRCONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-33	52-298	0.3	$CaO \cdot ZrO_2$; 68.67 ZrO_2 and 31.19 CaO.	Prepared by heating intimate mixture of reagent grade calcium carbonate and pure zirconia 30 hrs at 1200 - 1300 C; 32 hrs at 1400 - 1500 C.
◇	65-1	300-1200	0.8	$CaO \cdot ZrO_2$, from Norton Company.	

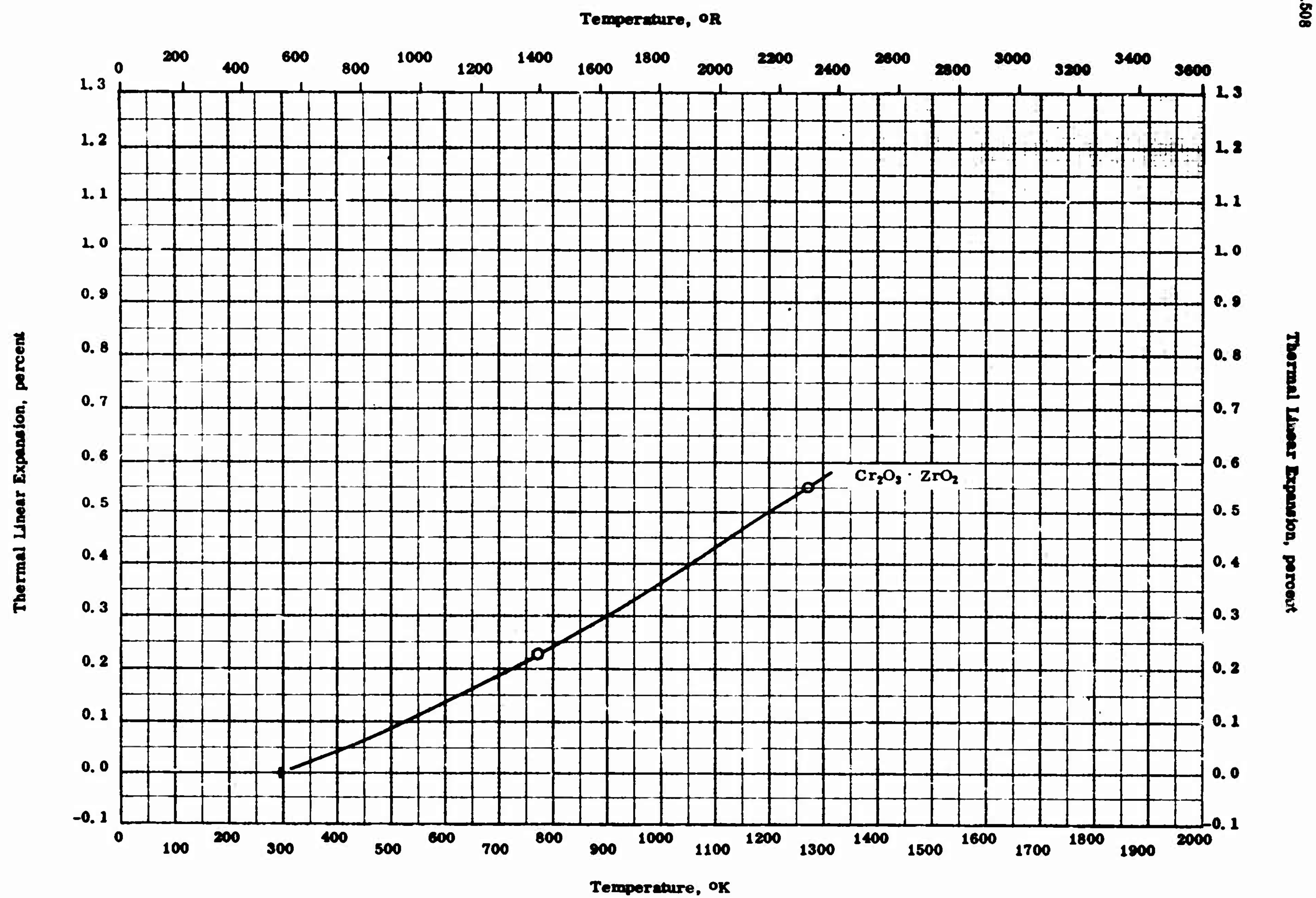


THERMAL LINEAR EXPANSION -- CALCIUM ZIRCONATE

THERMAL LINEAR EXPANSION -- CALCIUM ZIRCONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
△	60-35	298-1473		$CaO \cdot ZrO_2$.	
○	55-23	298-1473		99 pure Ca ZrO_3; prepared from c.p. ZrO_2 (0.1-0.5 CaO) and c.p. $CaCO_3$ (0.16 Mg).	Fired 1 hr at 1850 C.
□	53-26	308-1173		Prepared from c.p. ZrO_2 (0.097 Si, 0.043 Ti, 0.030 Fe, and 0.020 Mg) and c.p. $CaCO_3$ (0.16 Mg and 0.001 Fe).	Pressed at 10,000 psi and fired to 1750 C.

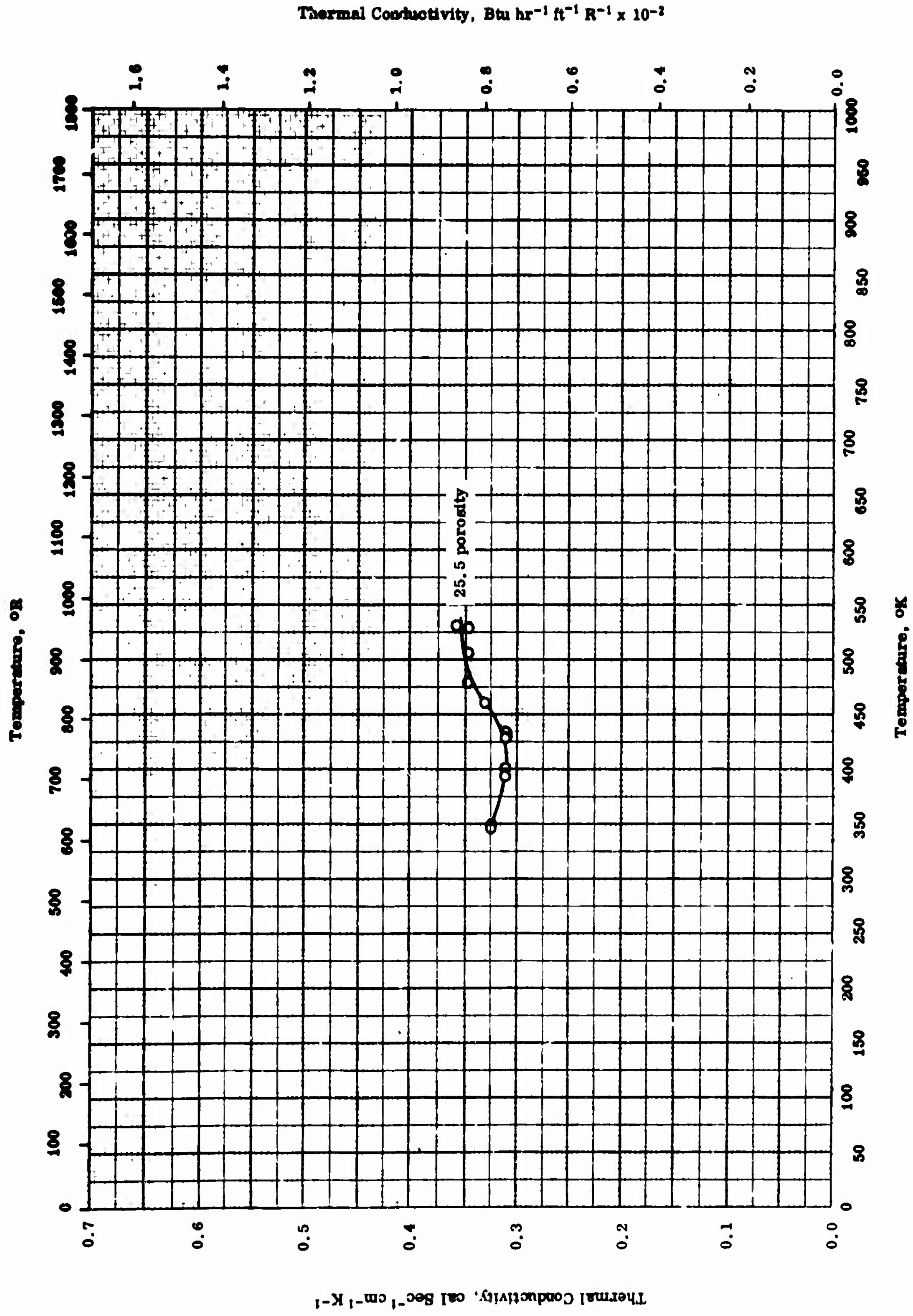


THERMAL LINEAR EXPANSION -- CHROMIUM ZIRCONATE

THERMAL LINEAR EXPANSION -- CHROMIUM ZIRCONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	60-35	298-1273		$Cr_2O_3 \cdot ZrO_2$.	

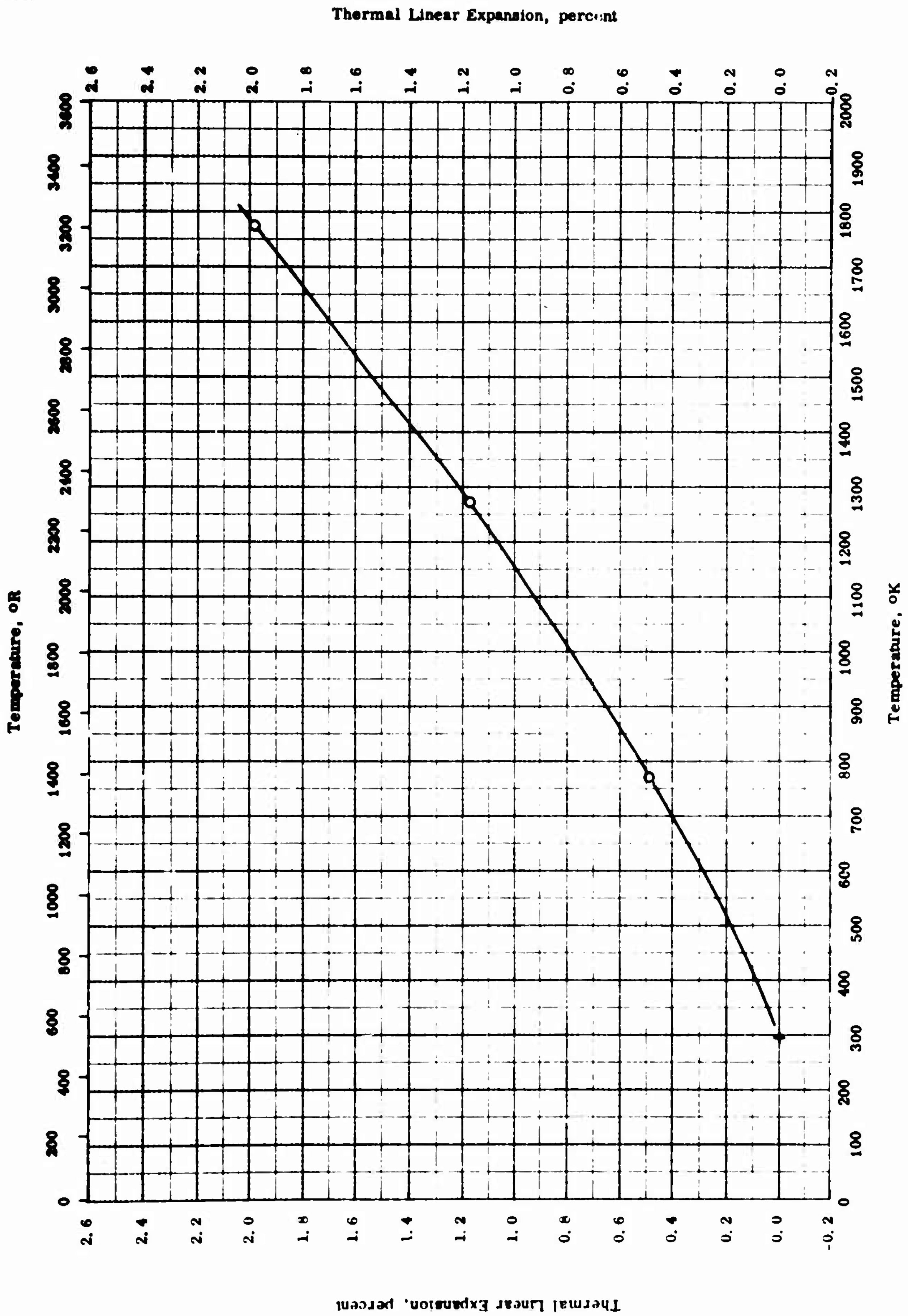


THERMAL CONDUCTIVITY -- LEAD ZIRCONATE

THERMAL CONDUCTIVITY -- LEAD ZIRCONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-2	345-530		$PbO \cdot ZrO_2$; density 6.05 g cm^{-3} and 25.5% porosity.	Prepared by meshing and pressing (pressure 0.53 ton cm^{-2}) a crashed and pulverized fired product of water mixture of PbO and ZrO_2; sintered at 1200 C for 2 hrs; measured in vacuum.



THERMAL LINEAR EXPANSION -- MAGNESIUM ZIRCONATE

THERMAL LINEAR EXPANSION -- MAGNESIUM ZIRCONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-35	298-1773		$MgO \cdot ZrO_2$.	

PROPERTIES OF STRONTIUM ZIRCONATE

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density.	5.48	343

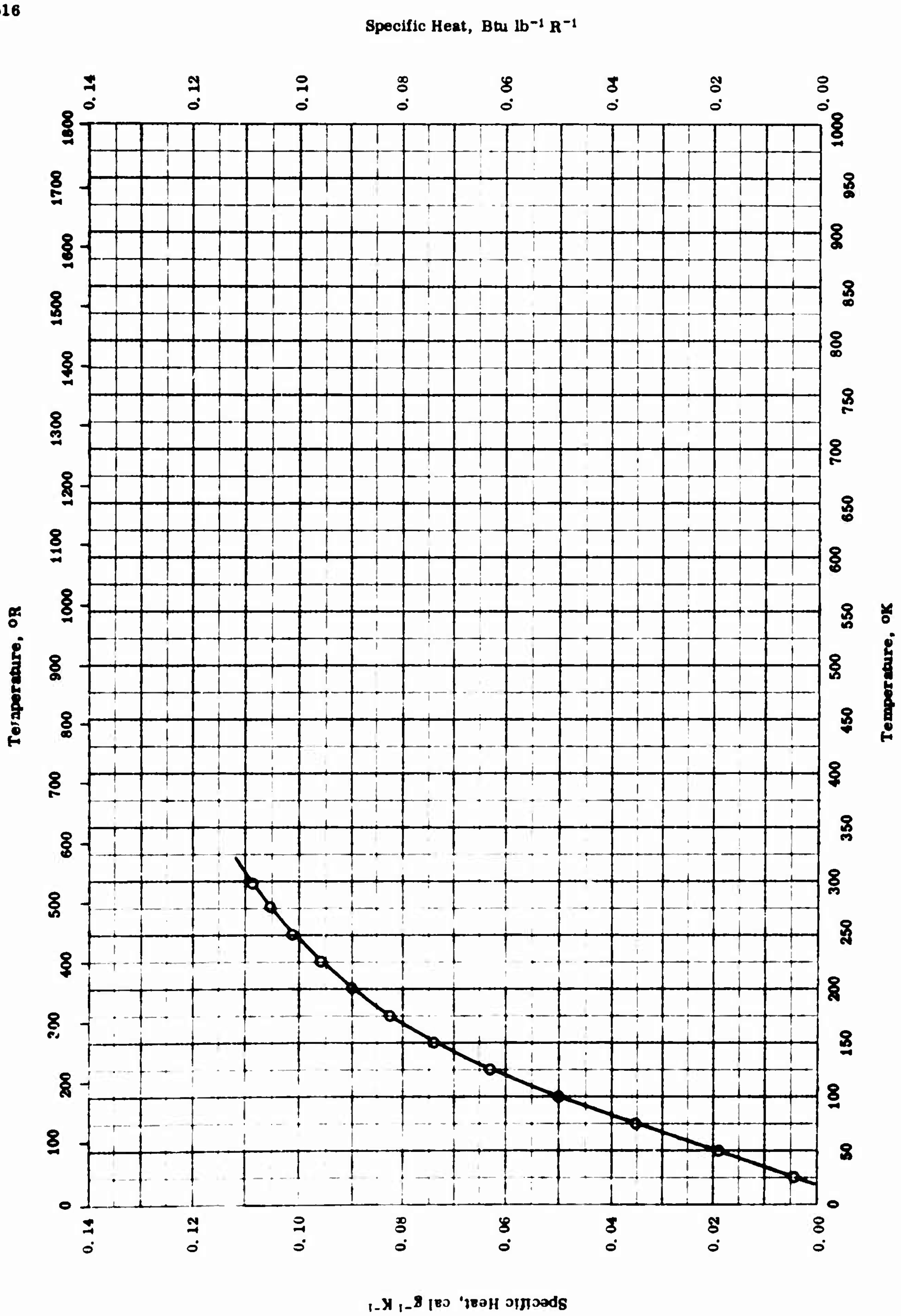
REPORTED VALUES

Density		g cm^{-3}	lb ft^{-3}
	O	5.48	342.5

PROPERTIES OF STRONTIUM ZIRCONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	59-9	298		$SrO \cdot ZrO_2$.	

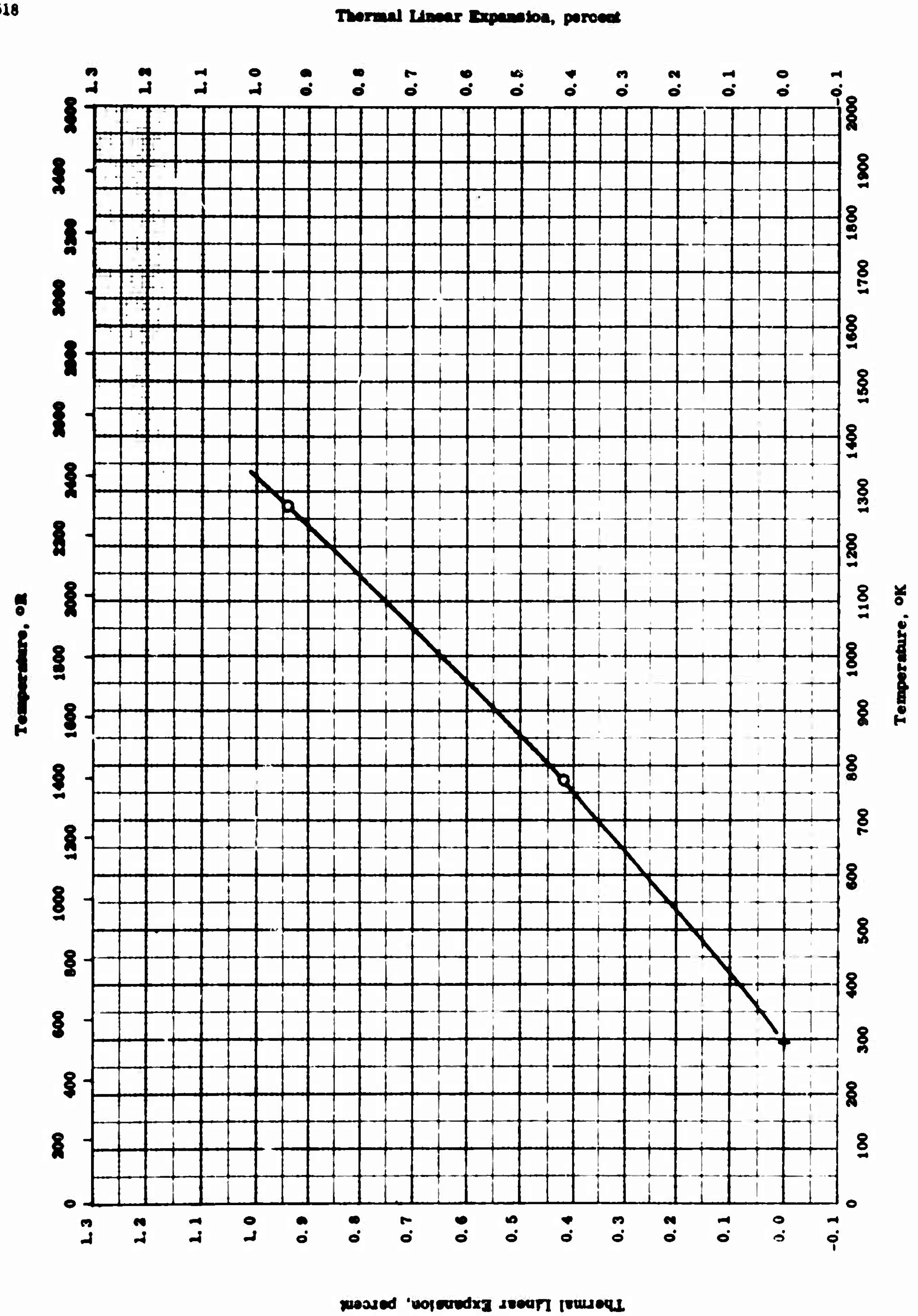


SPECIFIC HEAT -- STRONTIUM ZIRCONATE

SPECIFIC HEAT -- STRONTIUM ZIRCONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-33	52-298	0.3	$SrO \cdot ZrO_2$; 54.42 ZrO_2 and 45.56 SrO.	Prepared by heating reagent grade $SrCO_3$ and pure ZrO_2 24 hrs at 1000 C, 6 hrs at 1350 - 1400 C, 4 hrs at 1350 - 1470 C, and 12 hrs at 1300 - 1350 C.

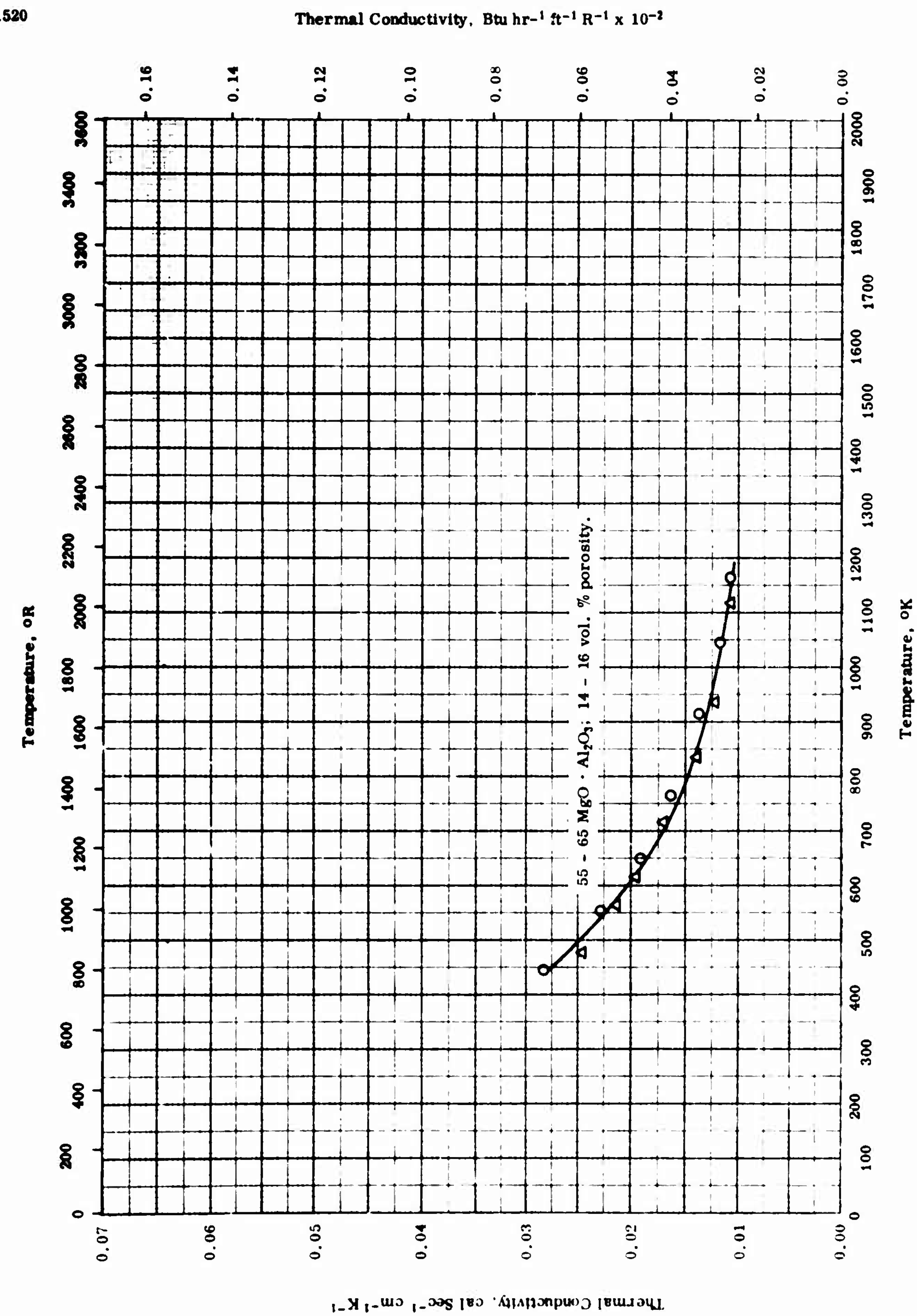


THERMAL LINEAR EXPANSION -- STRONTIUM ZIRCONATE

THERMAL LINEAR EXPANSION -- STRONTIUM ZIRCONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	60-35	298-1273		$SrO \cdot ZrO_2$.	

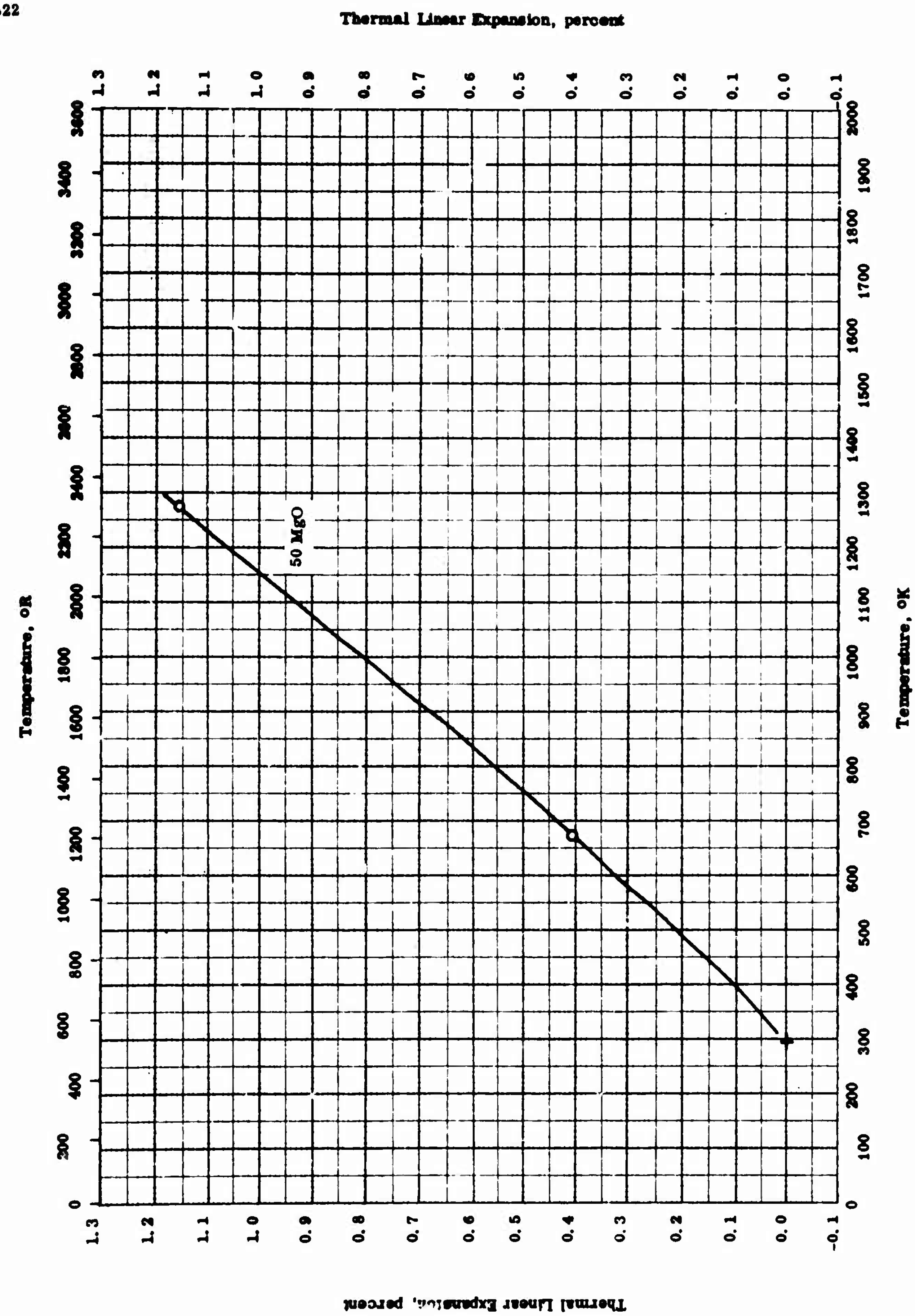


THERMAL CONDUCTIVITY -- MAGNESIUM ALUMINATE + MAGNESIUM OXIDE

THERMAL CONDUCTIVITY -- MAGNESIUM ALUMINATE + MAGNESIUM OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-1	443-1166	± 4	55 $MgO \cdot Al_2O_3$ and 45 MgO; bulk density 3.04 g cm^{-3} and porosity 14.8 vol. %.	Corresponding to 77.5 vol. % $MgO \cdot Al_2O_3$; fired at 1800 C; data corrected for porosity.
△	59-1	478-1118	± 4	65 $MgO \cdot Al_2O_3$ and 35 MgO; bulk density 2.99 g cm^{-3} and porosity 15.4 vol. %.	Corresponding to 91.2 vol. % $MgO \cdot Al_2O_3$; fired at 1800 C; data corrected for porosity.

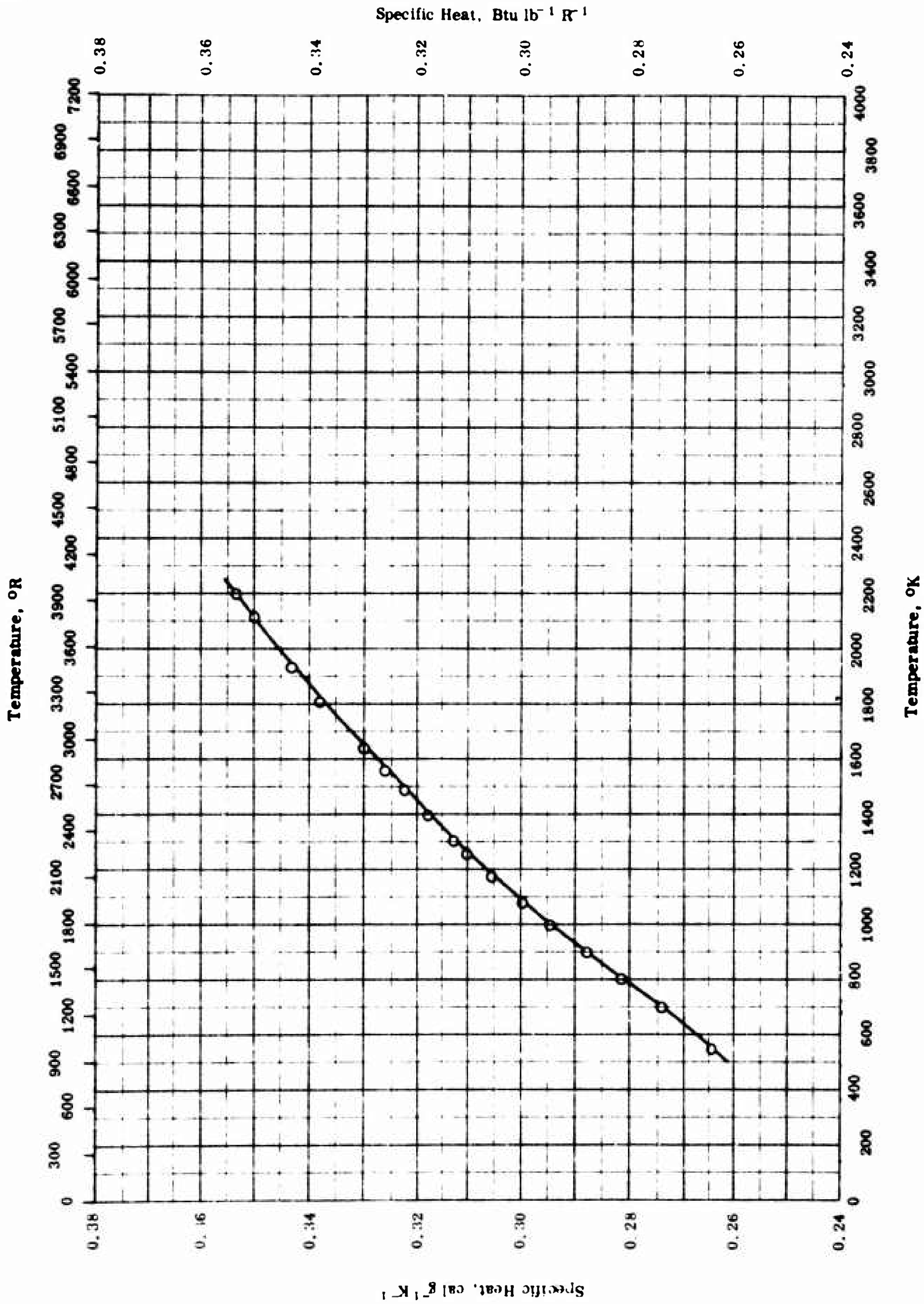


THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINATE + MAGNESIUM OXIDE

THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINATE + MAGNESIUM OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	61-43	298-1273		50 MgO and 50 $MgO \cdot Al_2O_3$.	Cold pressed and sintered.

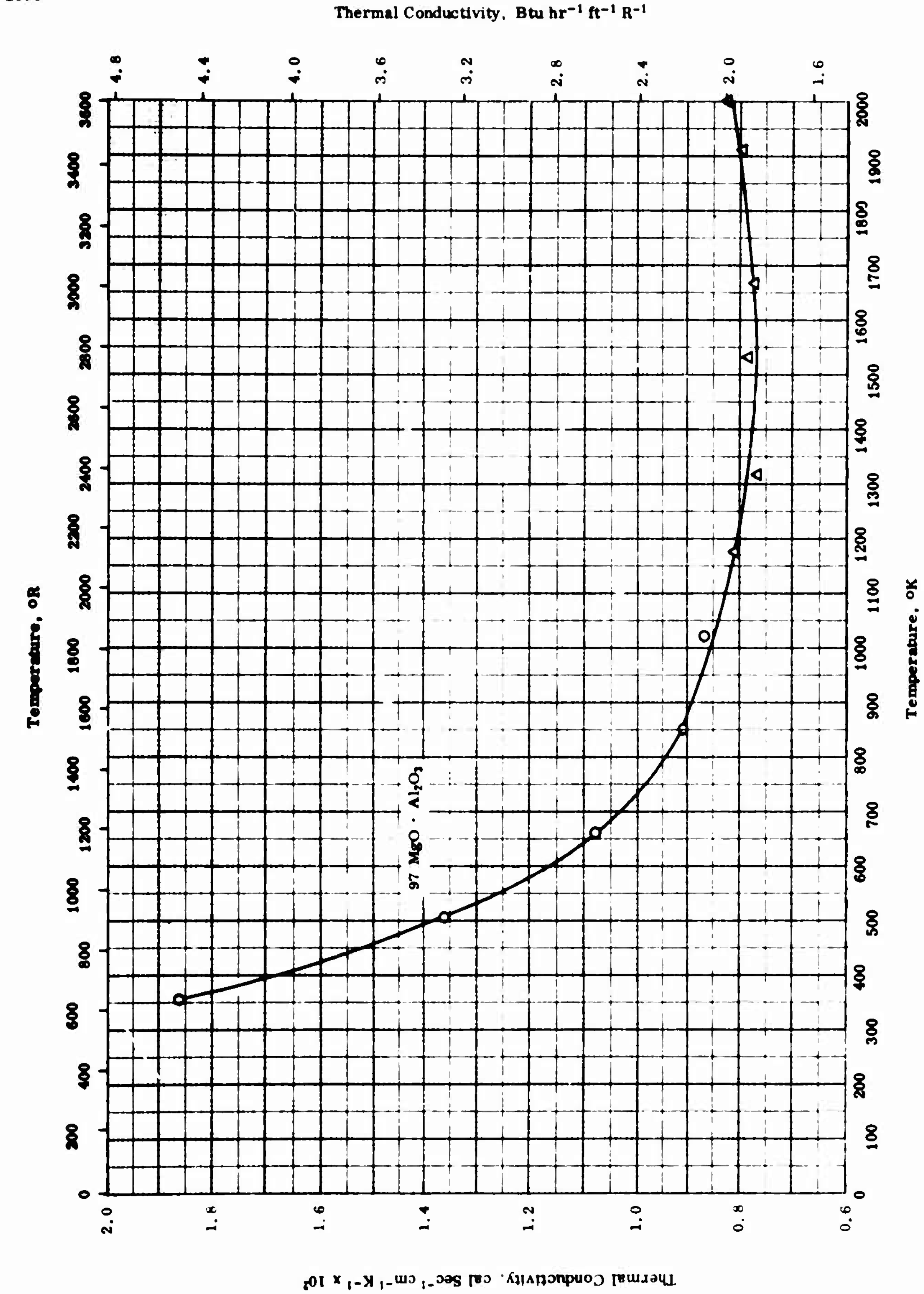


SPECIFIC HEAT -- MAGNESIUM ALUMINATE + SODIUM MONOXIDE

SPECIFIC HEAT -- MAGNESIUM ALUMINATE + SODIUM MONOXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-5	573-2197	± 5.0	Spinel; 68.26 Al_2O_3, 26.74 MgO, 3.17 Na_2O, 1.20 B, 0.33 SiO_2, and 0.26 Fe_2O_3.	Cold pressed.

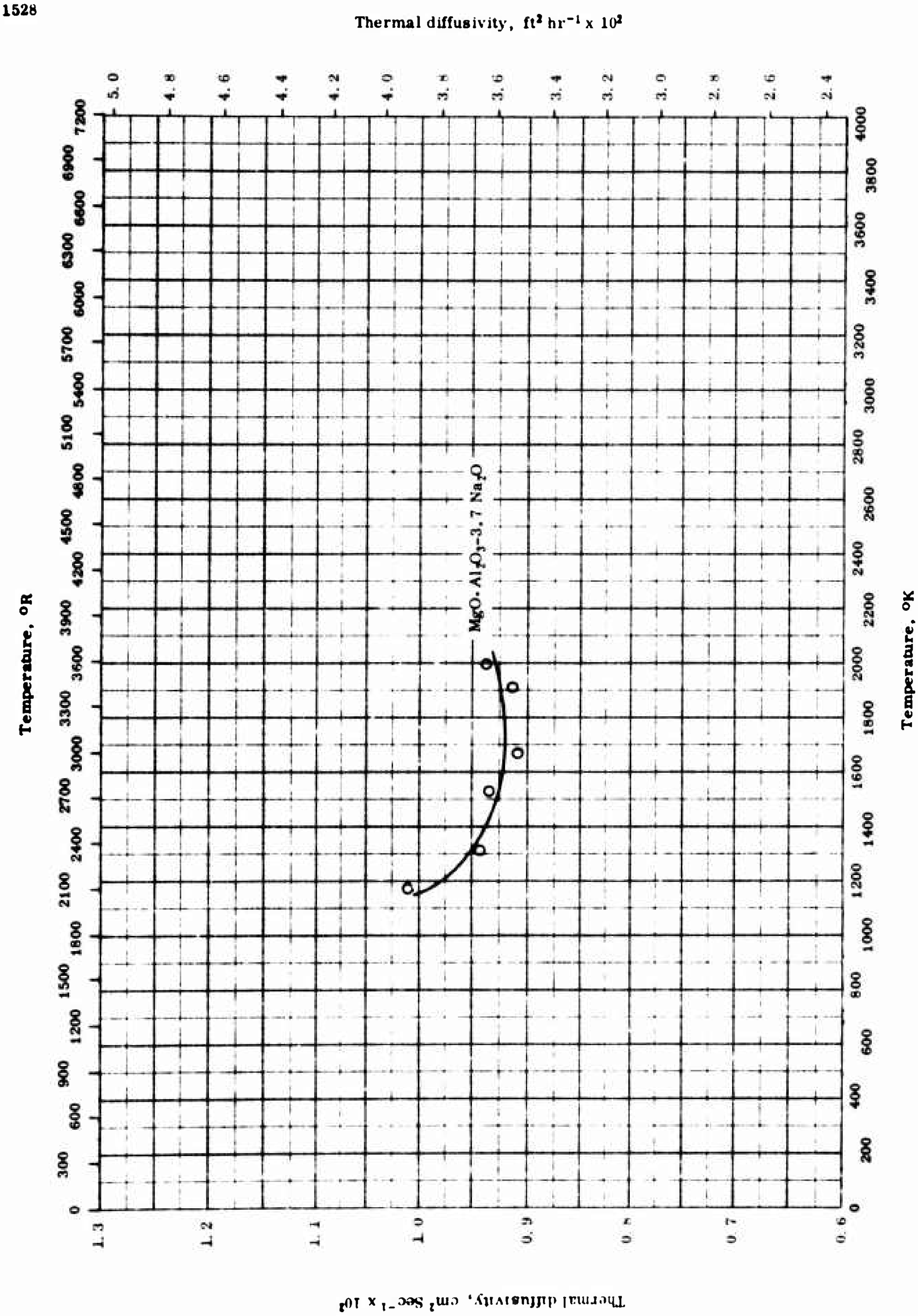


THERMAL CONDUCTIVITY -- MAGNESIUM ALUMINATE + SODIUM MONOXIDE

THERMAL CONDUCTIVITY -- MAGNESIUM ALUMINATE + SODIUM MONOXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-5	355-1022	± 4	68.26 Al_2O_3, 26.74 MgO, 3.17 Na_2O, 1.20 B, 0.33 SiO_2, and 0.026 Fe_2O_3.	Cold pressed and fired at 3300 F; surface-ground; measured in He atm.
△	63-5	1174-2000	+ 4	Same as above.	The above sample measured by another method.

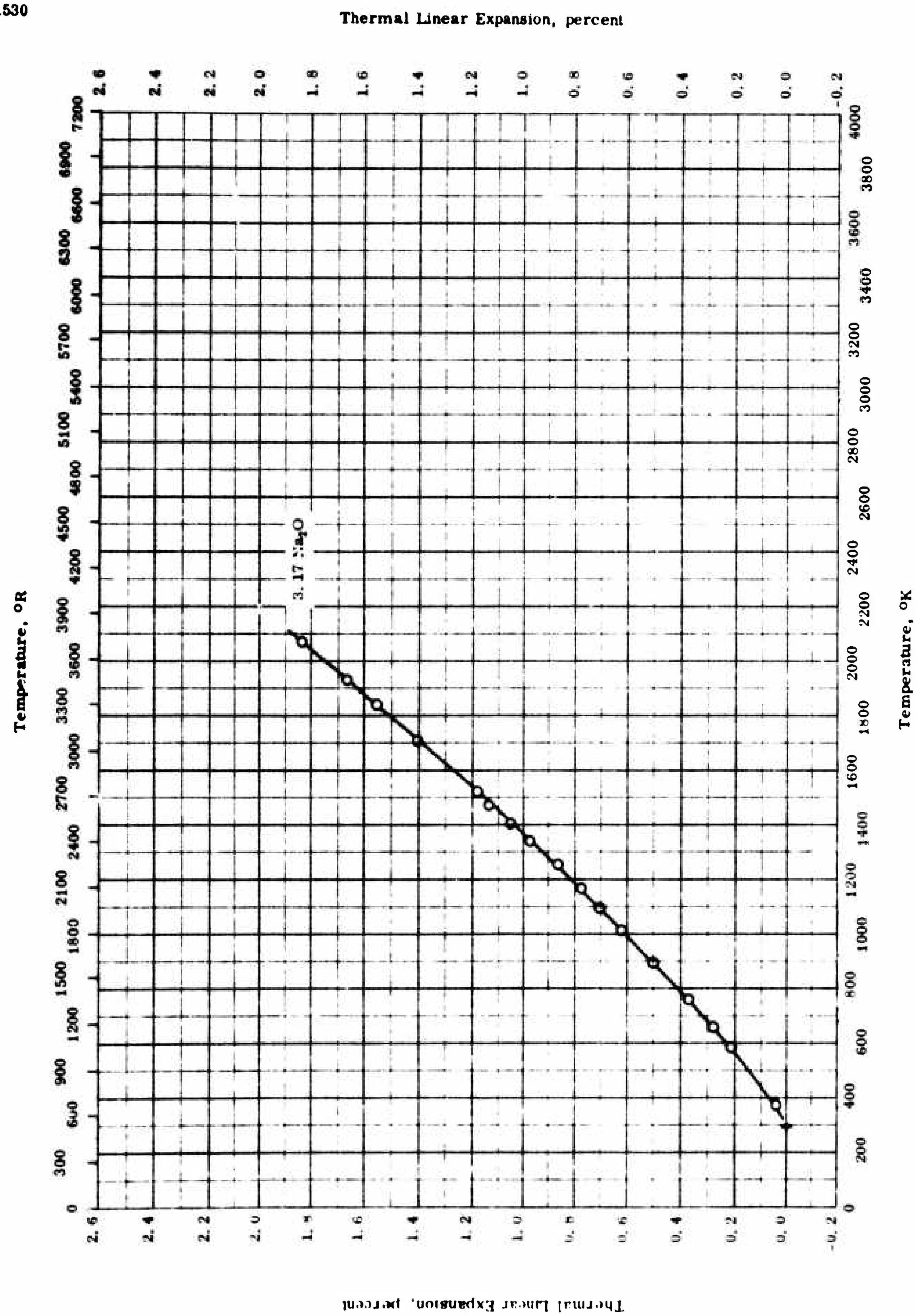


THERMAL DIFFUSIVITY -- MAGNESIUM ALUMINATE + SODIUM MONOXIDE

THERMAL DIFFUSIVITY -- MAGNESIUM ALUMINATE + SODIUM MONOXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-5	1175-2000		Spinel; 68.26 Al_2O_3, 26.74 MgO, and 3.17 Na_2O, 1.2 B, 0.33 SiO_2, and 0.26 Fe_2O_3; density 164 lb ft^{-3}.	Cold pressed and fired at 3300 F.

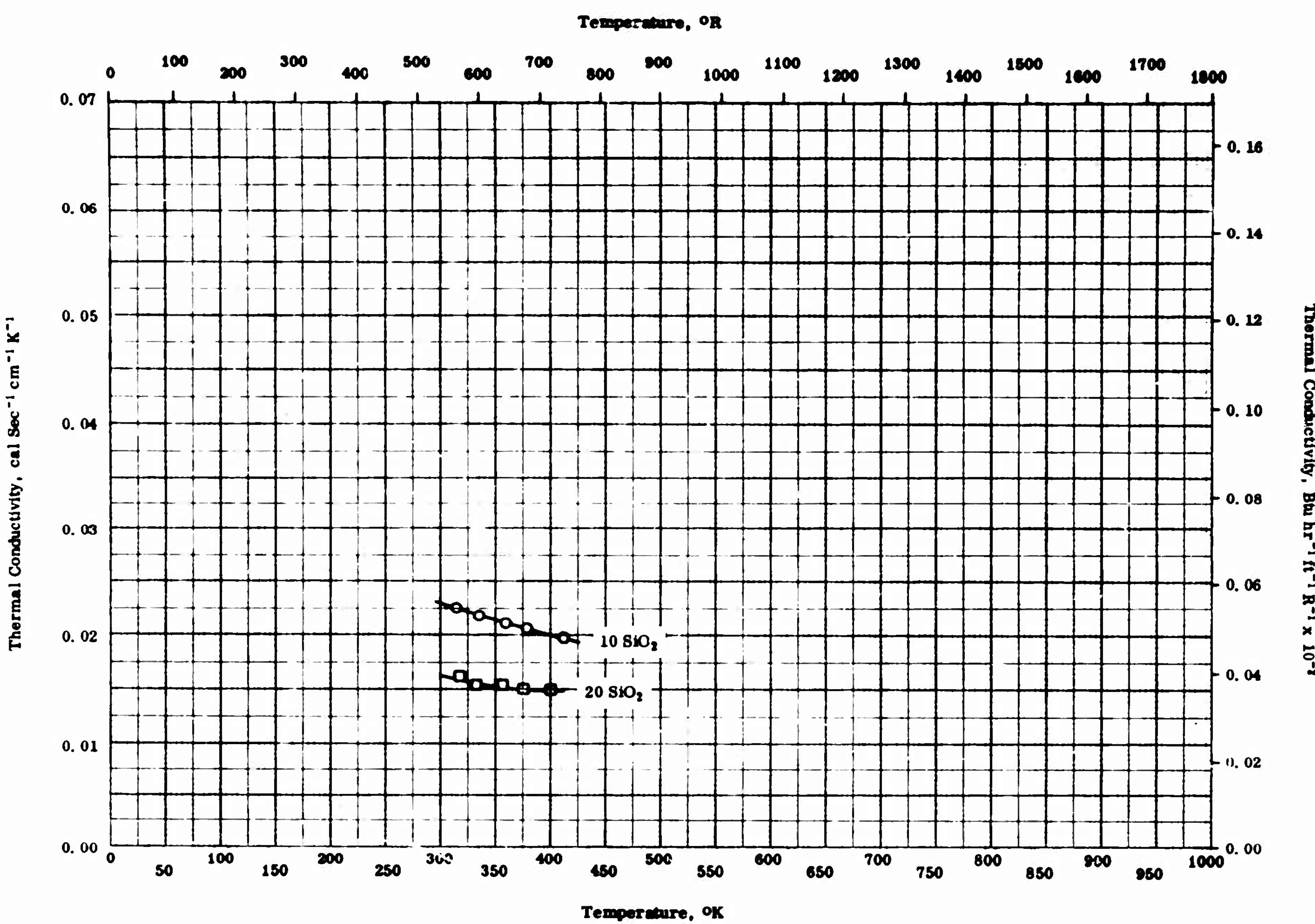


THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINATE + SODIUM MONOXIDE

THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINATE + SODIUM MONOXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	63-5	299-2062	2	$MgO \cdot Al_2O_3 + Na_2O$ from Laboratory Equipment Corp.; 68.26 Al_2O_3, 26.74 MgO, 3.17 Na_2O, 1.20 B, 0.33 SiO_2, and 0.26 Fe_2O_3; density 164 lb ft^{-3}; dimensions 1/2 in. in diameter by 6 in. long.	Cold pressed and fired at 3300 F; measured in a argon atm with heating rate of approx. 5 F min^{-1}.

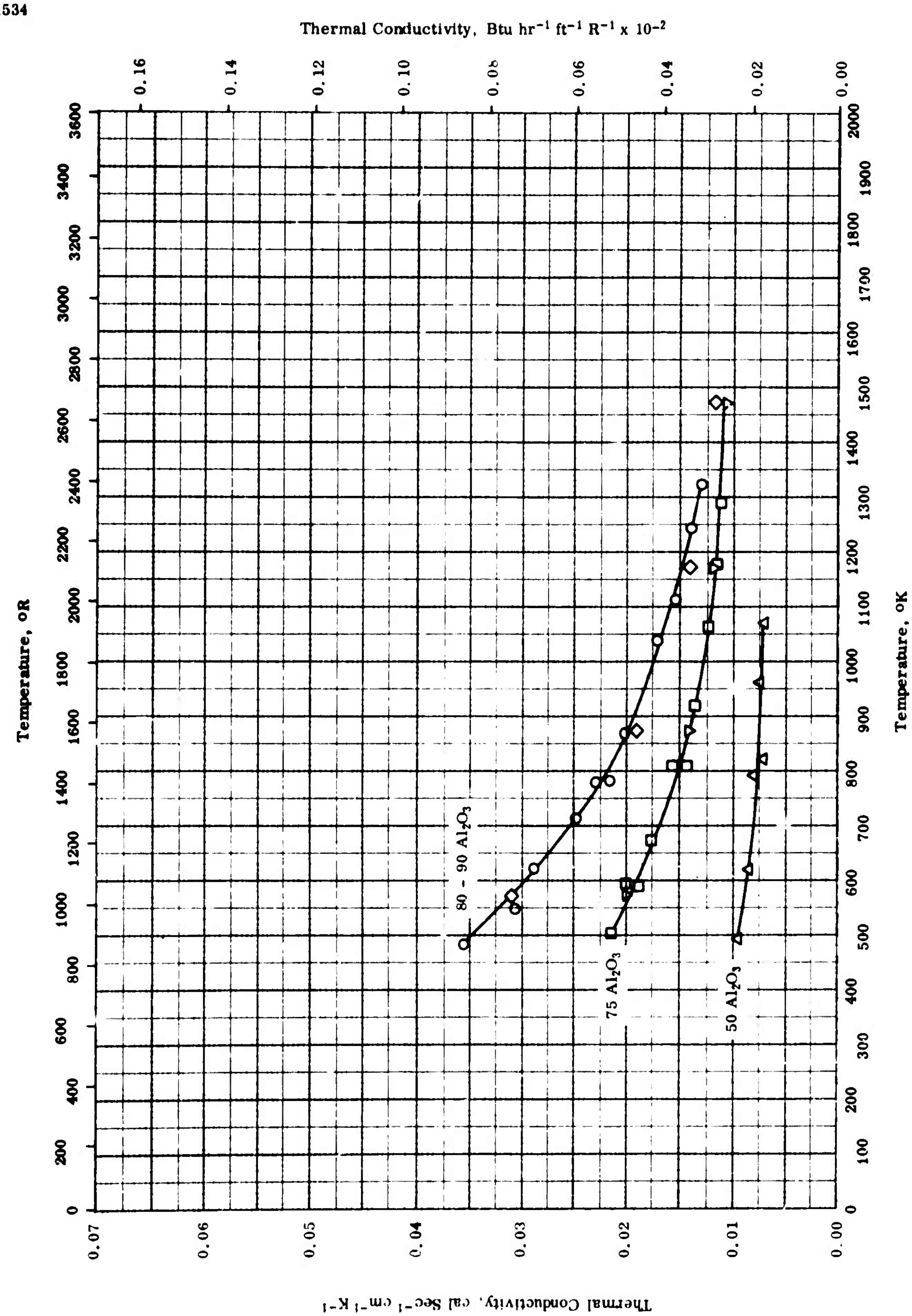


THERMAL CONDUCTIVITY -- MAGNESIUM ALUMINATE + SILICON DIOXIDE

THERMAL CONDUCTIVITY -- MAGNESIUM ALUMINATE + SILICON DIOXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-8	315-412	± 3	10 SiO_2.	Tested in vacuum.
□	54-8	317-401	± 3	20 SiO_2.	Same as above.

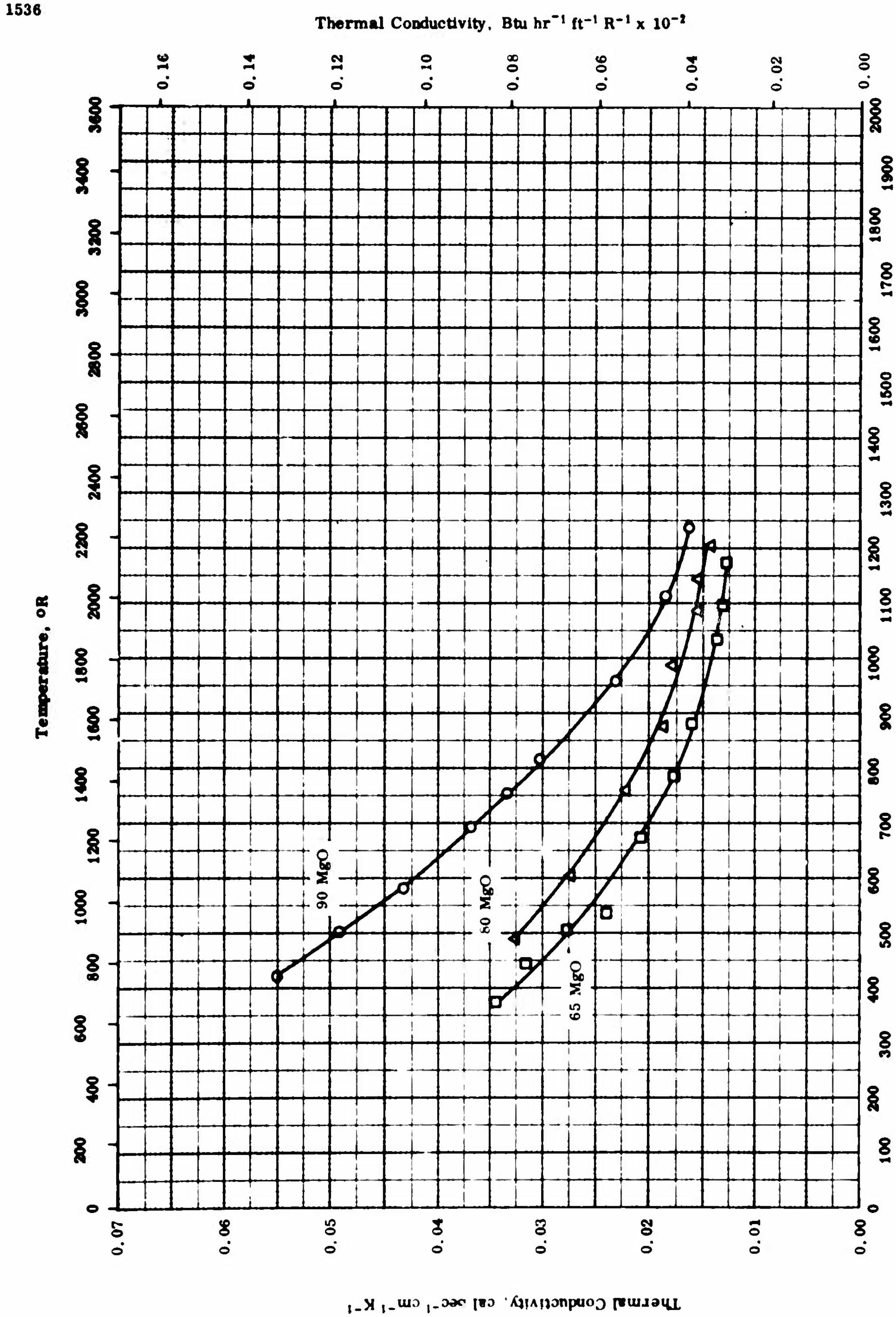


THERMAL CONDUCTIVITY -- ALUMINUM OXIDE + ALUMINUM SILICATE

THERMAL CONDUCTIVITY -- ALUMINUM OXIDE + ALUMINUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-1	486-1323	± 4	90 Al_2O_3 and 10 $3Al_2O_3 \cdot 2SiO_2$ (mullite); density 3.20 g cm^{-3} and total porosity 17.5%.	Fired at 1750 C; data corrected to zero porosity.
□	59-1	505-1288	± 4	75 Al_2O_3 and 25 $3Al_2O_3 \cdot 2SiO_2$ (mullite); density 3.08 g cm^{-3} and total porosity 17.4%.	Same as above.
△	59-1	493-1070	± 4	50 Al_2O_3 and 50 $3Al_2O_3 \cdot 2SiO_2$ (mullite); density 2.68 g cm^{-3} and total porosity 23.8%.	Same as above.
▽	54-3	573-1473		75.6 Al_2O_3 and 24.4 $3Al_2O_3 \cdot 2SiO_2$ (mullite)	Corresponding to 71 vol. % of Al_2O_3.
◇	54-3	573-1473		83.8 Al_2O_3 and 16.2 $3Al_2O_3 \cdot 2SiO_2$ (mullite).	Corresponding to 81.7 vol. % of Al_2O_3.

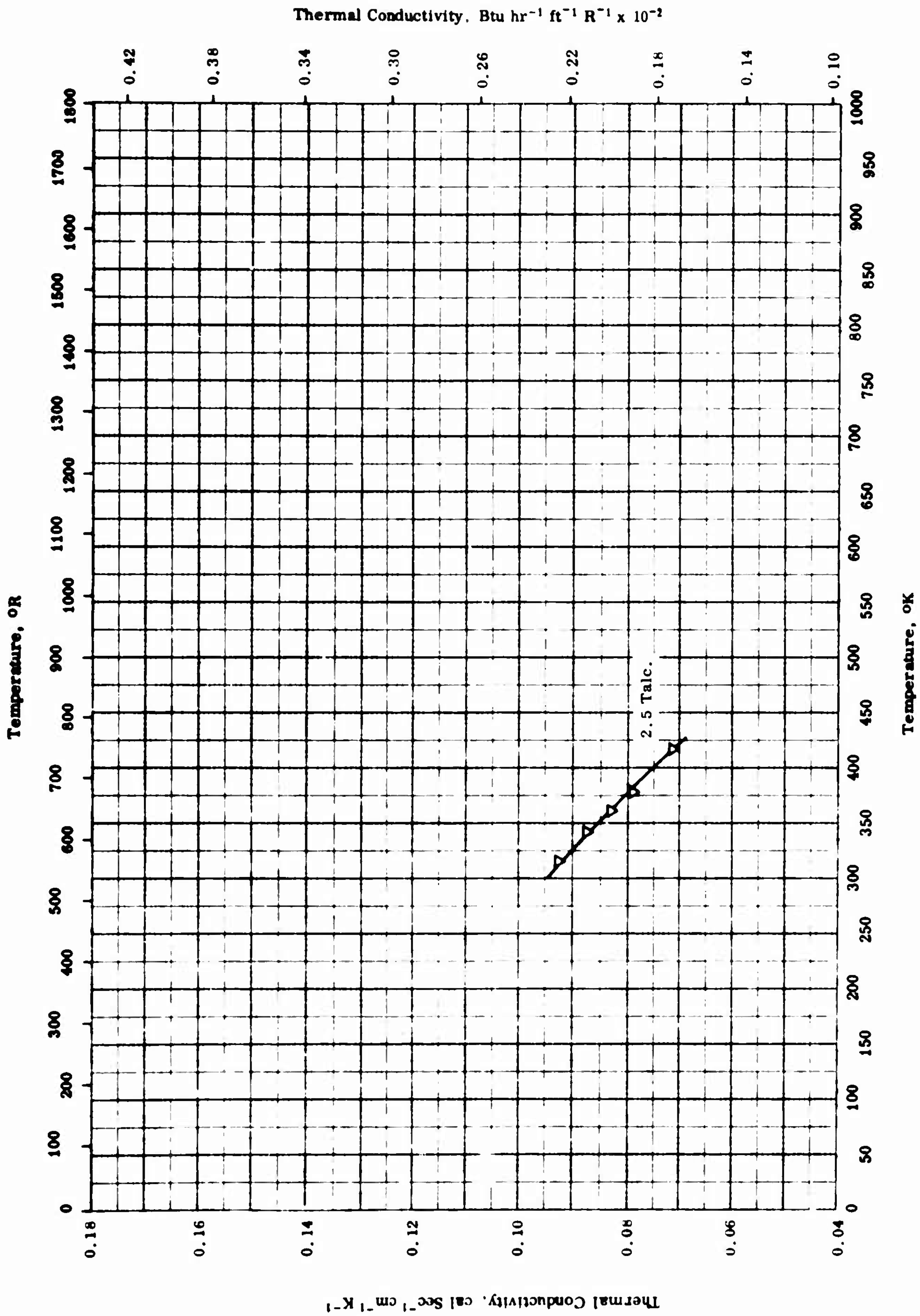


THERMAL CONDUCTIVITY -- MAGNESIUM OXIDE + MAGNESIUM ALUMINATE

THERMAL CONDUCTIVITY -- MAGNESIUM OXIDE + MAGNESIUM ALUMINATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-1	423-1239	± 4	10 $MgO \cdot Al_2O_3$; bulk density 3.25 g cm^{-3} and porosity 10.7 vol %.	Corresponding to 14.4 vol % $MgO \cdot Al_2O_3$; fired at 1800 C; data corrected for porosity.
△	59-1	490-1202	± 4	20 $MgO \cdot Al_2O_3$; bulk density 3.39 g cm^{-3} and porosity 6.4 vol %.	Corresponding to 28.7 vol % $MgO \cdot Al_2O_3$; fired at 1800 C; data corrected for porosity.
□	59-1	376-1173	± 4	35 $MgO \cdot Al_2O_3$; bulk density 3.19 g cm^{-3} and porosity 11.4 vol %.	Corresponding to 49.8 vol % $MgO \cdot Al_2O_3$; fired at 1800 C; data corrected for porosity.

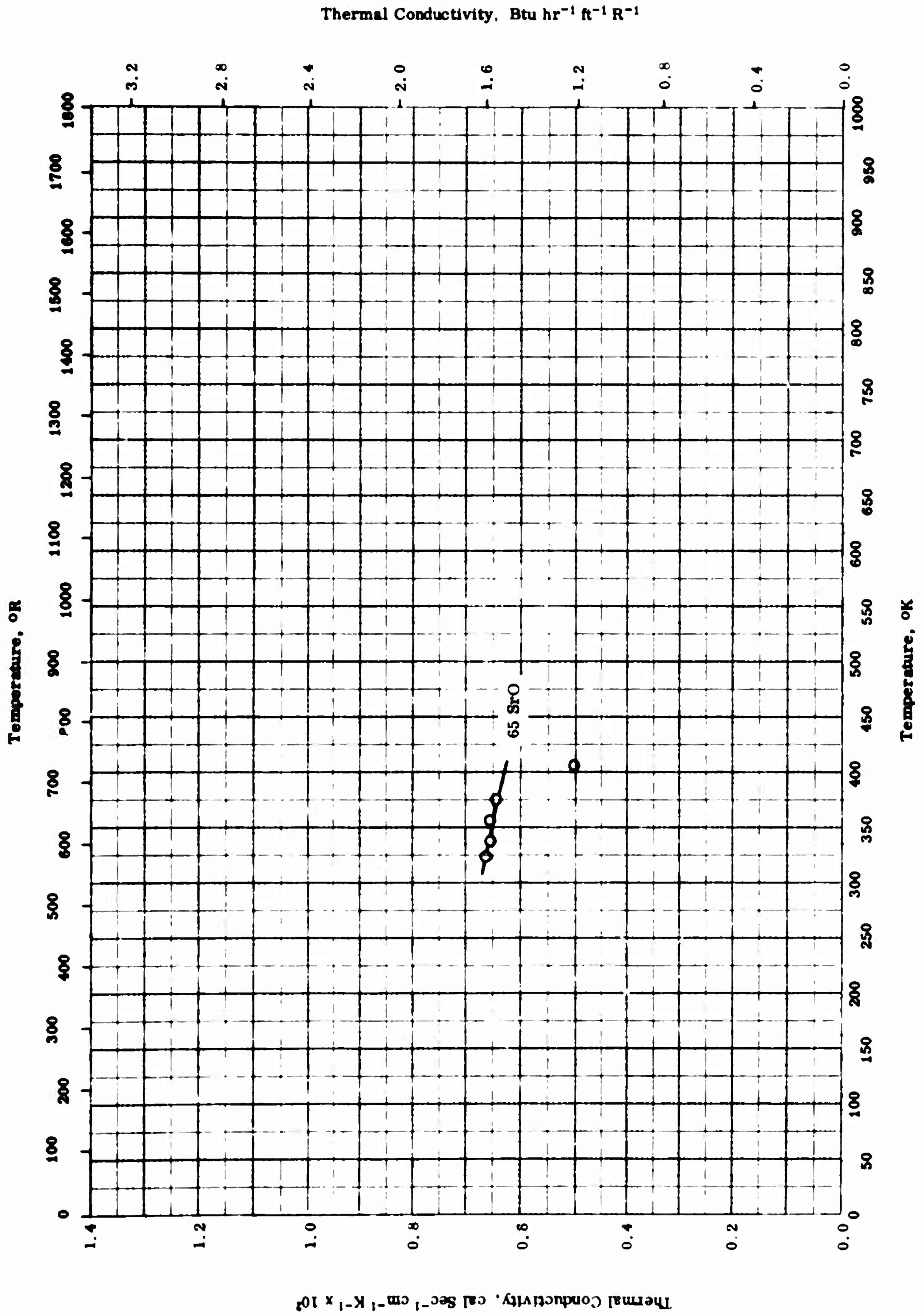


THERMAL CONDUCTIVITY -- MAGNESIUM OXIDE + MAGNESIUM SILICATE

THERMAL CONDUCTIVITY -- MAGNESIUM OXIDE + MAGNESIUM SILICATE

PEFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▽	53-5	315-418		97.5 MgO, 2.5 Talc ($4SiO_2 \cdot 3MgO \cdot H_2O$); density 217 lb ft^{-3}.	Fired 1 hr. at 2800 F; tested in vacuum.

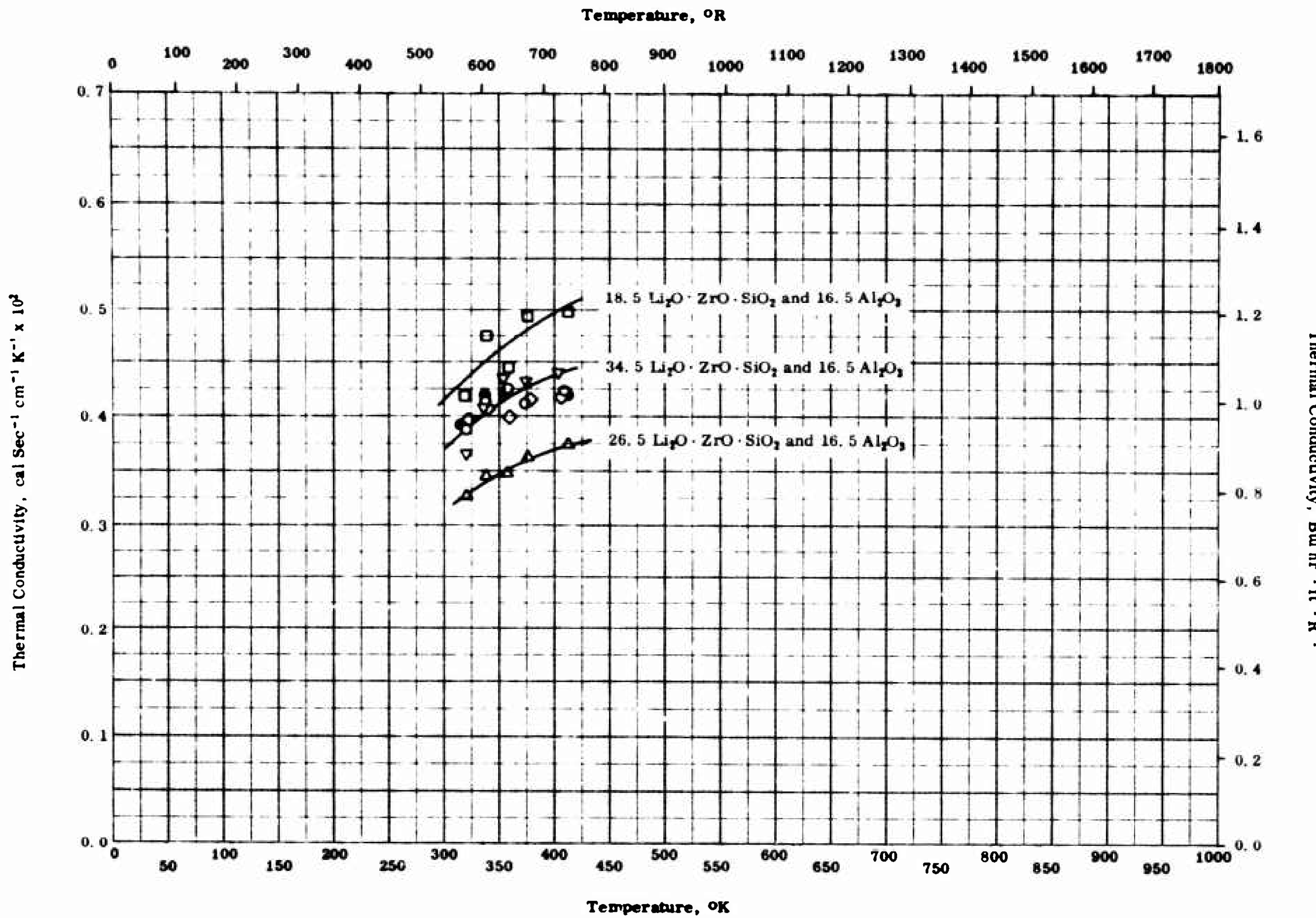


THERMAL CONDUCTIVITY -- STRONTIUM OXIDE + LITHIUM METAALUMINATE + ALUMINUM OXIDE

THERMAL CONDUCTIVITY -- STRONTIUM OXIDE + LITHIUM METAALUMINATE + ALUMINUM OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	53-3	324-407		65.0 SrO, 18.3 $Li_2O \cdot Al_2O_3$, and 16.7 Al_2O_3; density 3.12 g cm^{-3} at 25 C; water absorption 0%.	Fired at 2400 F.

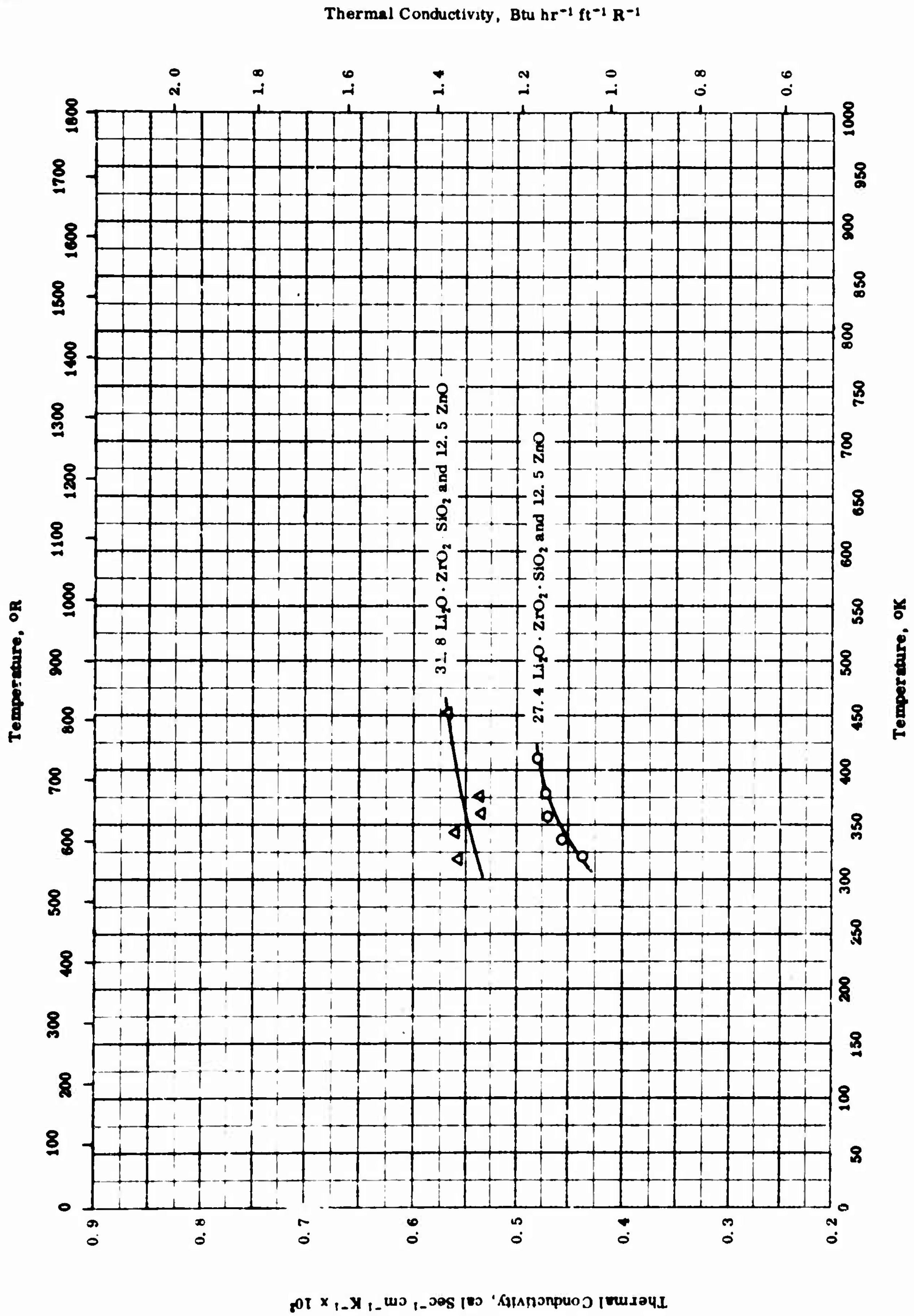


THERMAL CONDUCTIVITY -- STRONTIUM OXIDE + LITHIUM ZIRCONIUM SILICATE + ALUMINUM OXIDE

THERMAL CONDUCTIVITY -- STRONTIUM OXIDE + LITHIUM ZIRCONIUM SILICATE + ALUMINUM OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	53-5	319-412		65.0 SrO, 18.5 $Li_2O \cdot ZrO \cdot SiO_2$, and 16.5 Al_2O_3; density 3.22 g cc^{-1} at 25 C; 0% water absorption.	
○	53-5	320-408		68.0 SrO, 19.5 $Li_2O \cdot ZrO \cdot SiO_2$, and 16.5 Al_2O_3; density 3.16 g cc^{-1} at 25 C; 0% water absorption.	
△	53-5	321-412		61.0 SrO, 26.5 $Li_2O \cdot ZrO \cdot SiO_2$, and 16.5 Al_2O_3; density 2.49 g cc^{-1} at 25 C; 0.021% water absorption.	
◇	53-5	322-406		55.5 SrO, 32.0 $Li_2O \cdot ZrO \cdot SiO_2$, and 16.5 Al_2O_3; density 2.95 g cc at 25 C; 0% water absortion.	
▽	53-5	319-404		53.0 SrO, 34.5 $Li_2O \cdot ZrO \cdot SiO_2$, and 16.5 Al_2O_3; density 3.00 g cc^{-1} at 25 C; 0% water absorption.	
●	53-5	317-409		51.0 SrO, 36.5 $Li_2O \cdot ZrO \cdot SiO_2$, and 16.5 Al_2O_3; density 2.75 g cc^{-1} at 25 C; 0.82% water absorption.	

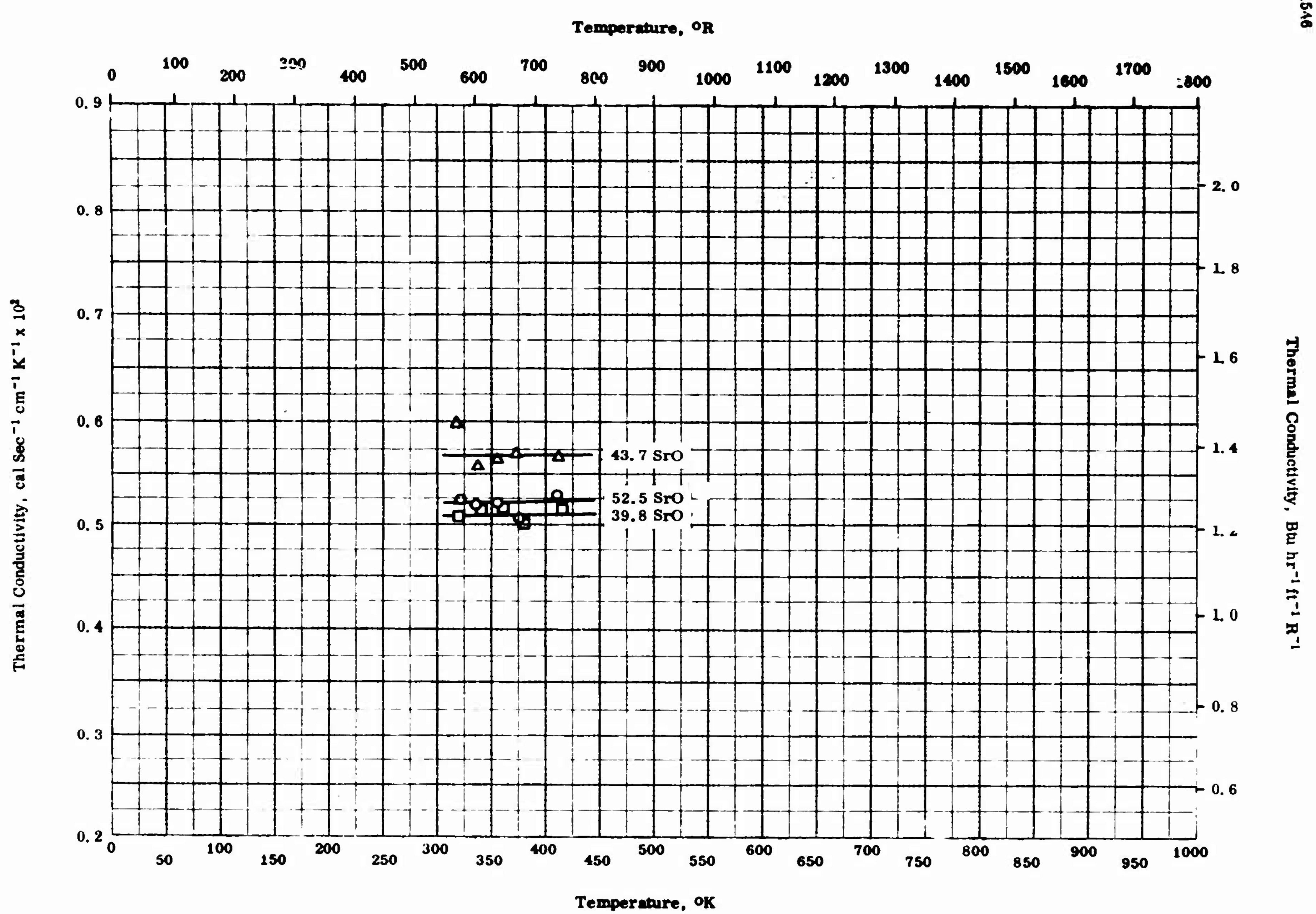


THERMAL CONDUCTIVITY -- STRONTIUM OXIDE + LITHIUM ZIRCONIUM SILICATE + ZINC OXIDE

THERMAL CONDUCTIVITY -- STRONTIUM OXIDE + LITHIUM ZIRCONIUM SILICATE + ZINC OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-3	321-411		55.7 SrO, 31.8 $Li_2O \cdot ZrO_2 \cdot SiO_2$, and 12.5 ZnO; density 3.27 g cm^{-3} at 25 C and 0% water absorption.	Fired at 1880 F.
△	53-3	318-452		47.6 SrO, 27.4 $Li_2O \cdot ZrO_2 \cdot SiO_2$, and 25.0 ZnO; density 3.52 g cm^{-3} at 25 C and 0.071% water absorption.	Fired at 2075 F.

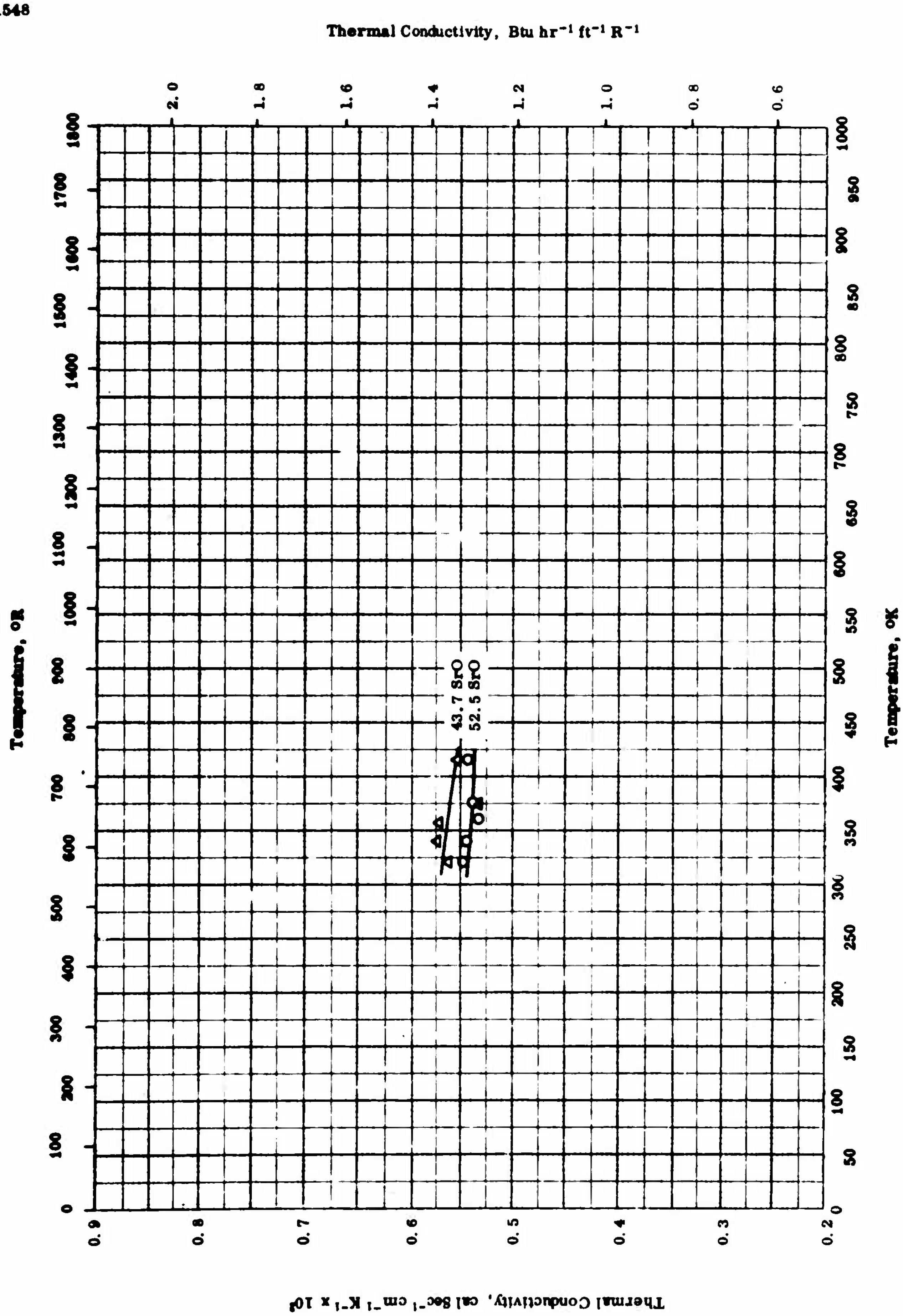


THERMAL CONDUCTIVITY -- STRONTIUM OXIDE + TITANIUM DIOXIDE + LITHIUM ZIRCONIUM SILICATE

THERMAL CONDUCTIVITY -- STRONTIUM OXIDE + TITANIUM DIOXIDE + LITHIUM ZIRCONIUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-3	322-409		52.5 SrO, 25.0 TiO_2, and 22.5 $Li_2O \cdot ZrO_2 \cdot SiO_2$; density 2.80 g cm^{-3} at 25 C and water absorption 0.024%.	Firing temperature 2100 F.
□	53-3	321-415		39.8 SrO, 37.4 TiO_2, and 22.8 $Li_2O \cdot ZrO_2 \cdot SiO_2$; density 2.38 g cm^{-3} and water absorption 0.0041%.	Same as above.
△	53-3	317-412		43.7 SrO, 37.5 TiO_2, and 18.8 $Li_2O \cdot ZrO_2 \cdot SiO_2$; density 2.92 g cm^{-3} and water absorption 0.0096%.	Same as above.

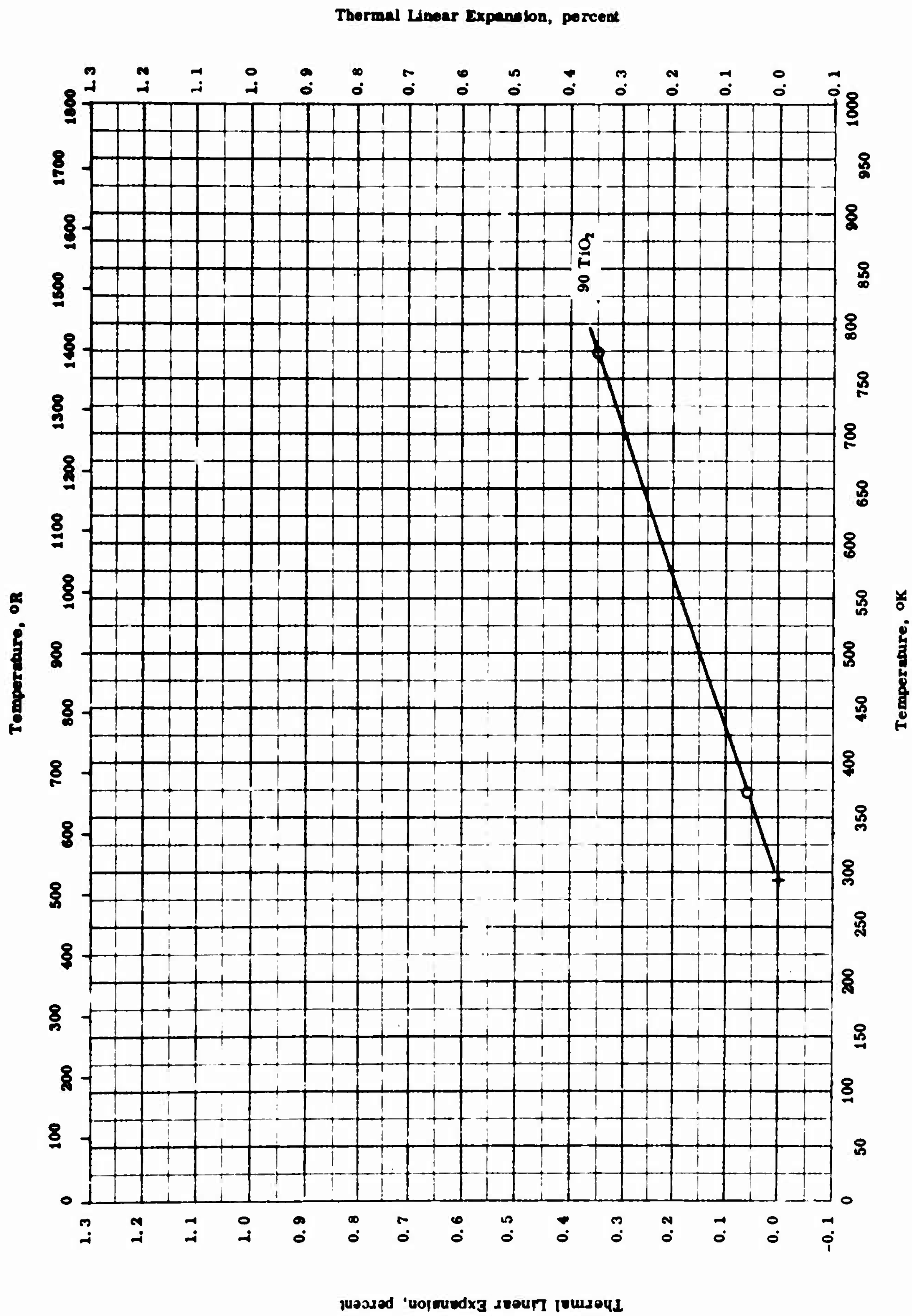


THERMAL CONDUCTIVITY -- STRONTIUM OXIDE + ZINC OXIDE + LITHIUM ZIRCONIUM SILICATE

THERMAL CONDUCTIVITY -- STRONTIUM OXIDE + ZINC OXIDE + LITHIUM ZIRCONIUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-3	321-415		52.5 SrO, 25.0 ZnO, and 22.5 $Li_2O \cdot ZrO_2 \cdot SiO_2$; density 3.48 g cm^{-3} and water absorption 0.024%.	Fired at 2250 F.
△	53-3	320-415		43.7 SrO, 37.5 ZnO, and 18.8 $Li_2O_3 \cdot ZrO_2 \cdot SiO_2$; density 3.12 g cm^{-3} and water absorption 0%.	Fired at 2400 F.

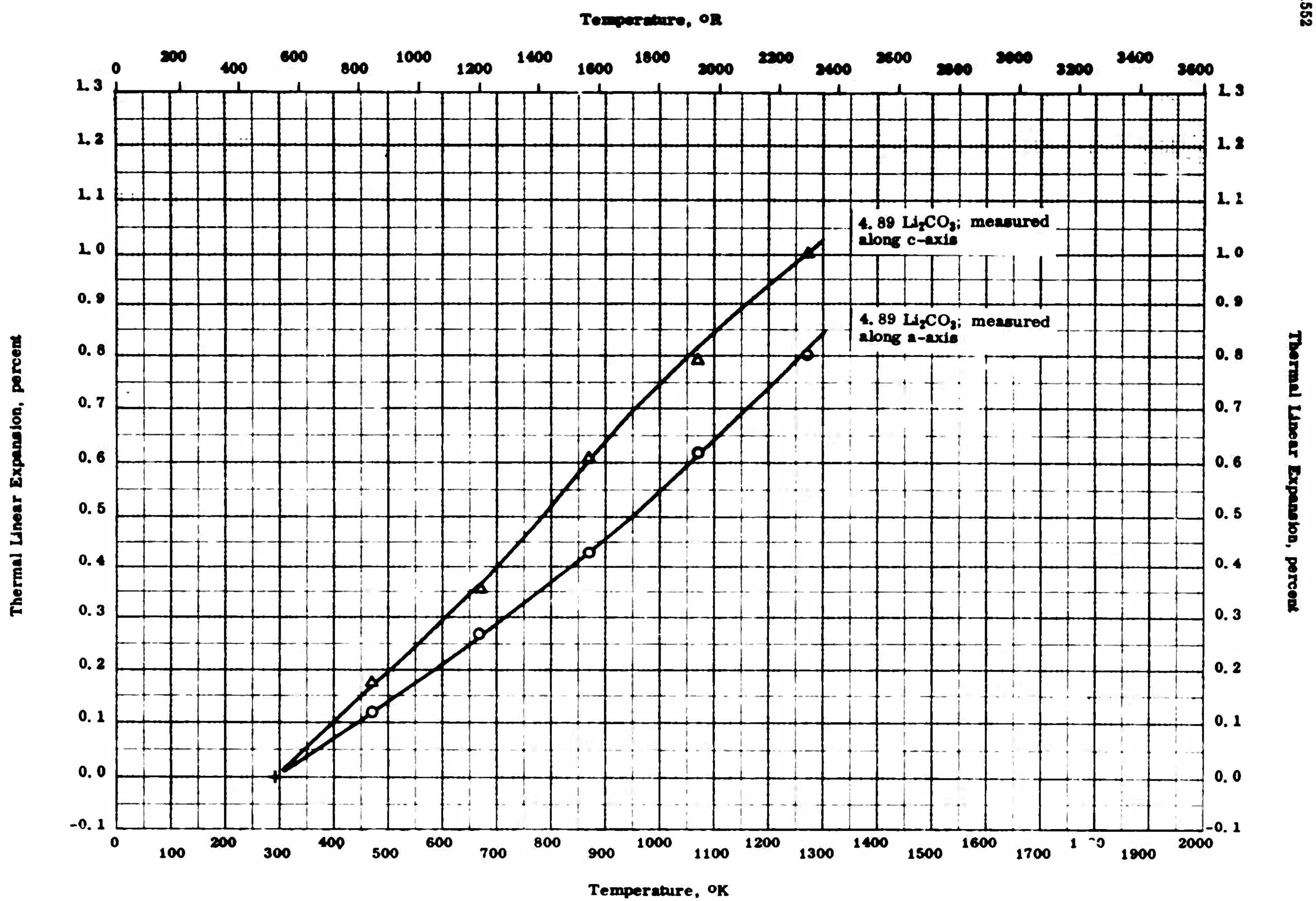


THERMAL LINEAR EXPANSION -- TITANIUM DIOXIDE + BERYLLIUM OXIDE + + CALCIUM TITANIUM SILICATE + MAGNESIUM OXIDE

THERMAL LINEAR EXPANSION -- TITANIUM DIOXIDE + BERYLLIUM OXIDE + + CALCIUM TITANIUM SILICATE + MAGNESIUM OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	41-10	293-773		90 TiO_2 and 3.4 each BeO, $CaTiSiO_5$, and MgO.	

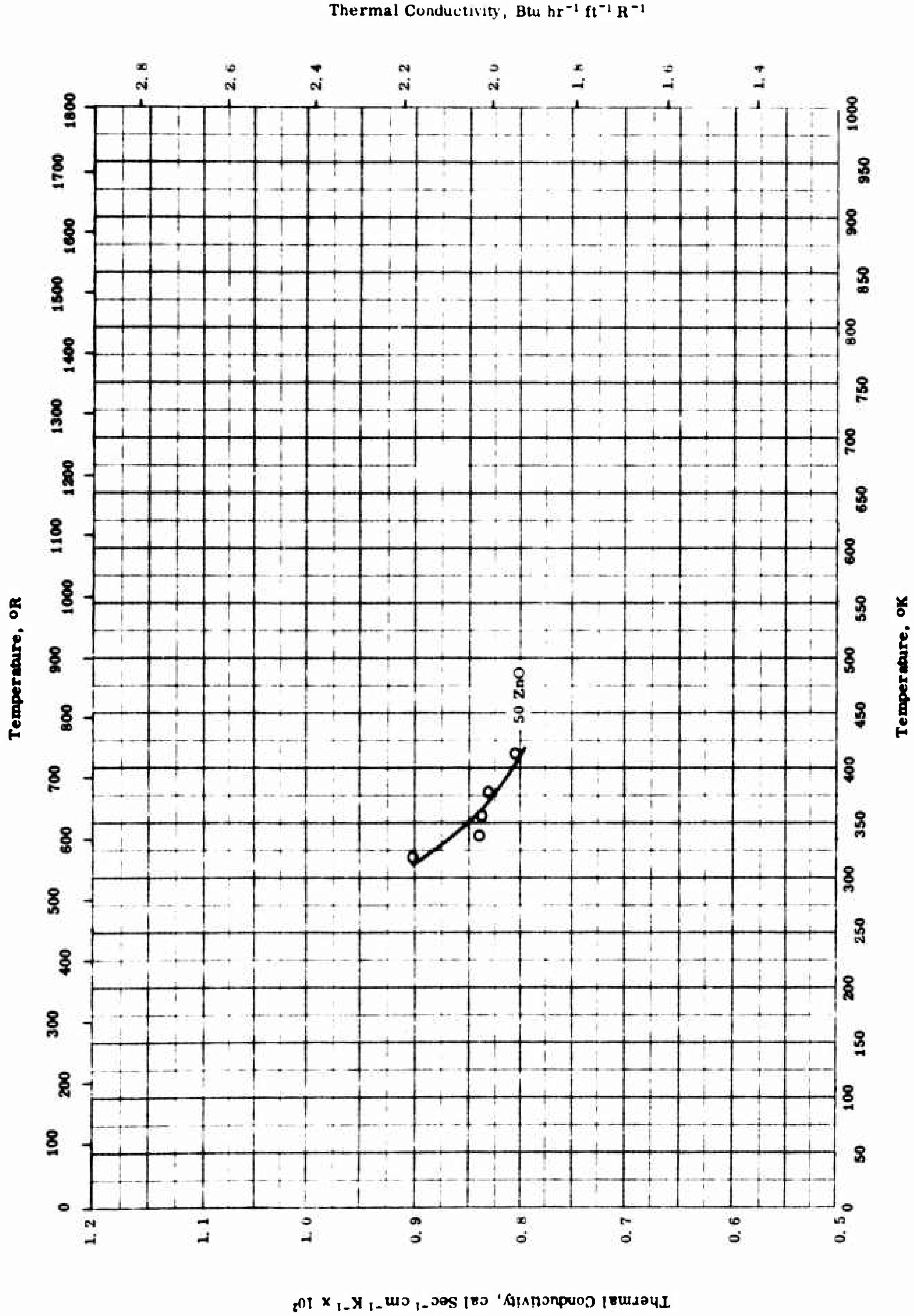


THERMAL LINEAR EXPANSION -- TITANIUM DIOXIDE + LITHIUM CARBONATE

THERMAL LINEAR EXPANSION -- TITANIUM DIOXIDE + LITHIUM CARBONATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-36	301-1273		95.11 TiO_2 and 4.89 Li_2CO_3; prepared from reagent grade Li_2CO_3; TiO_2 is Titanium Pigment Corporation's Titanox TG with < 0.01 CaO, < 0.1 WO_3, < 0.008 Nb, < 0.007 Sb_2O_3, < 0.04 SiO_2, 0.006 Fe_2O_3, 0.001 V, 0.00005 Mn, 0.0005 Cu, 0.0004 Cr, and 0.001 - 0.002 Pb.	100 g TiO_2 and 5.14 g Li_2CO_3 ball-milled for 4 hrs, passed through a 4 mesh standard screen, mixed with 15 binder (40 g Carbowax 20 M, 20 cc of 2 Methocel solution and 40 cc H_2O), dried at 110 C for 1 hr, passed through a 16 mesh screen, pressed at 7000 psi into 1 in. disks about 1/4 in. thick, fired to 1200 C for 18 hrs, cooled to room temperature in less than 30 min, and crushed to minus 325 mesh; measured along a-axis by x-ray diffraction.
△	60-36	301-1273		Same as above.	Same as above except measured along c-axis.

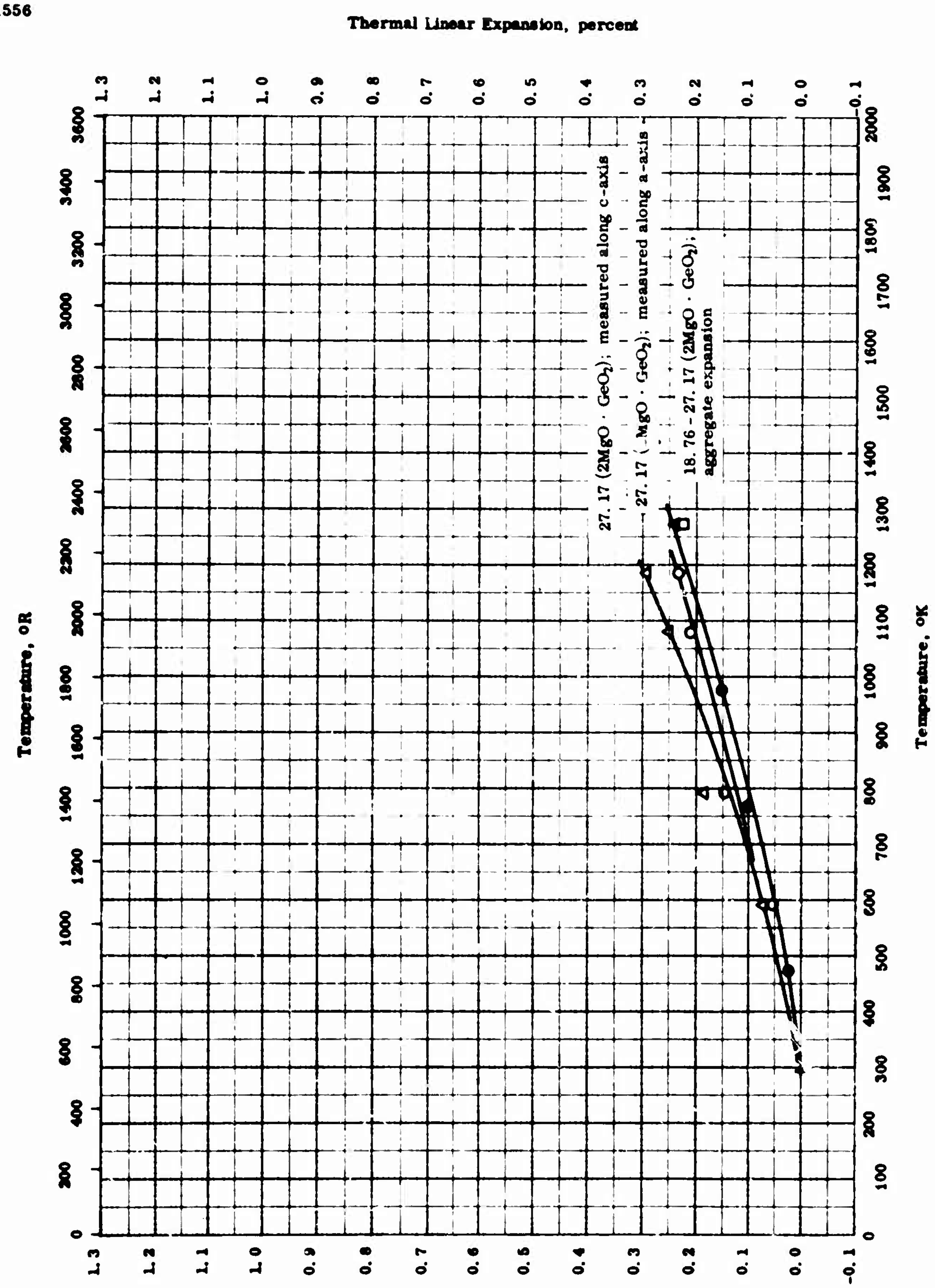


THERMAL CONDUCTIVITY -- ZINC OXIDE + STRONTIUM OXIDE + LITHIUM ZIRCONIUM SILICATE

THERMAL CONDUCTIVITY -- ZINC OXIDE + STRONTIUM OXIDE + LITHIUM ZIRCONIUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	53-3	318-413		50 ZnO, 31.8 SrO, and 18.2 $Li_2O \cdot ZrO_2 \cdot SiO_2$; density 3.83 g cm^{-3} and 0.030% water absorption.	Fired at 2130 F.



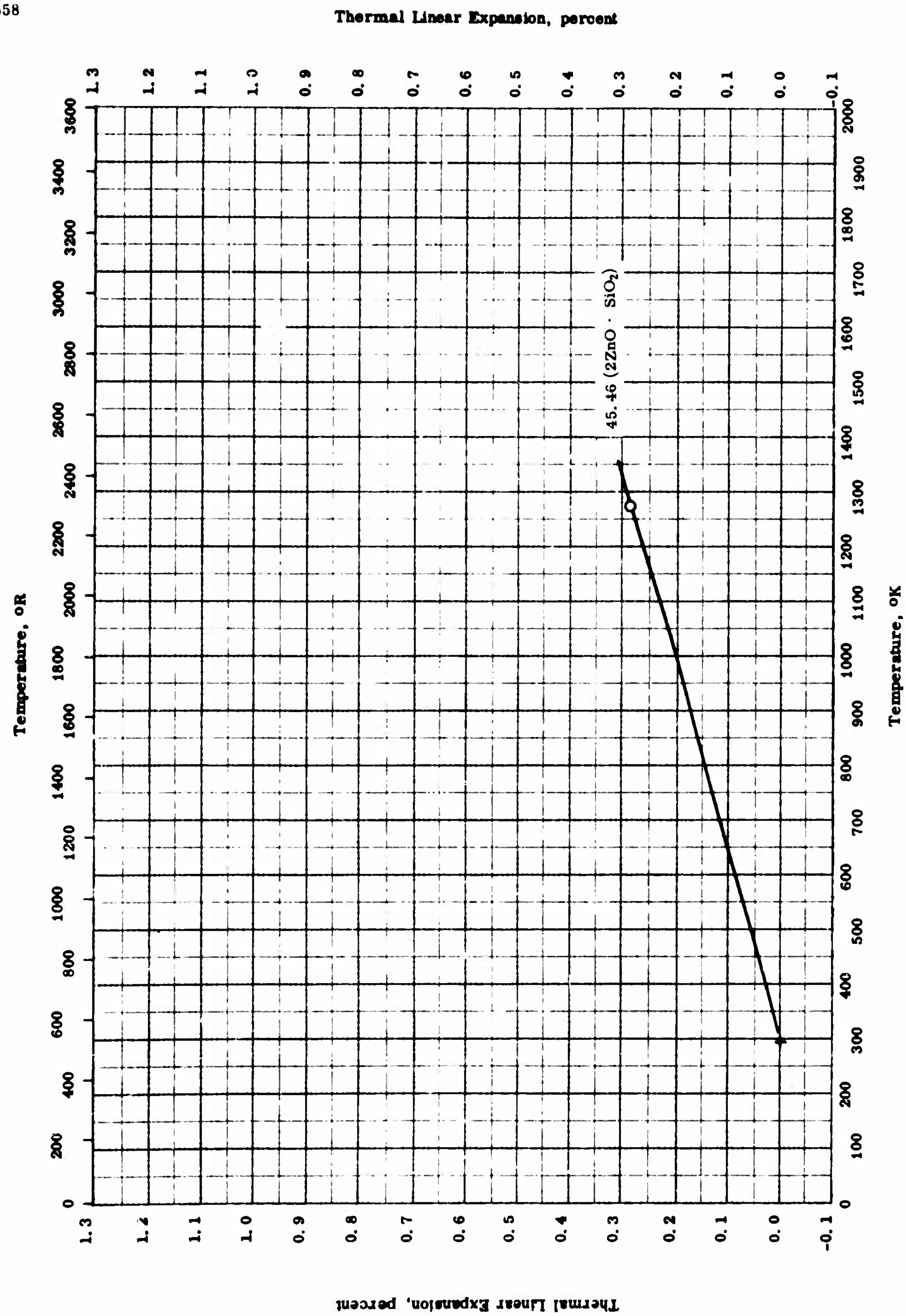
THERMAL LINEAR EXPANSION -- ZINC GERMANIUM OXIDE + MAGNESIUM GERMANIUM OXIDE

THERMAL LINEAR EXPANSION -- ZINC GERMANIUM OXIDE + MAGNESIUM GERMANIUM OXIDE

THERMAL LINEAR EXPANSION -- ZINC GERMANIUM OXIDE + MAGNESIUM GERMANIUM OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	64-19	293-1183		72.83 ($2ZnO \cdot GeO_2$) and 27.17 ($2MgO \cdot GeO_2$), corresponds to 44.34 ZnO, 43.84 GeO_2, and 11.83 MgO; prepared from c. p. grade ZnO, basic magnesium carbonate, and GeO_2. [Author's design : Sample B4]	Raw materials mixed together, dried, and heat treated; measured along a-axis by x-ray diffraction.
△	64-19	293-1183		Same as above.	Same as above except measured along c-axis.
●	64-19	293-1267		Same as above.	Raw materials mixed together, dried, pressed into 1 cm by 1 cm by 10 cm bars at 500 psi, and heat treated; aggregate expansion measured with heating rate of 125 C hr^{-1}.
▲	64-19	293-1273		81.24 ($2ZnO \cdot GeO_2$) and 18.76 ($2MgO \cdot GeO_2$), corresponds to 49.46 ZnO, 42.37 GeO_2, and 8.17 MgO; raw materials same as above. [Author's design : Sample B3]	Same as above.
□	64-19	293-1273		89.10 ($2ZnO \cdot GeO_2$) and 10.90 ($2MgO \cdot GeO_2$), corresponds to 54.24 ZnO, 41.01 GeO_2, and 4.74 MgO; raw materials same as above. [Author's design : Sample B2]	Same as above.

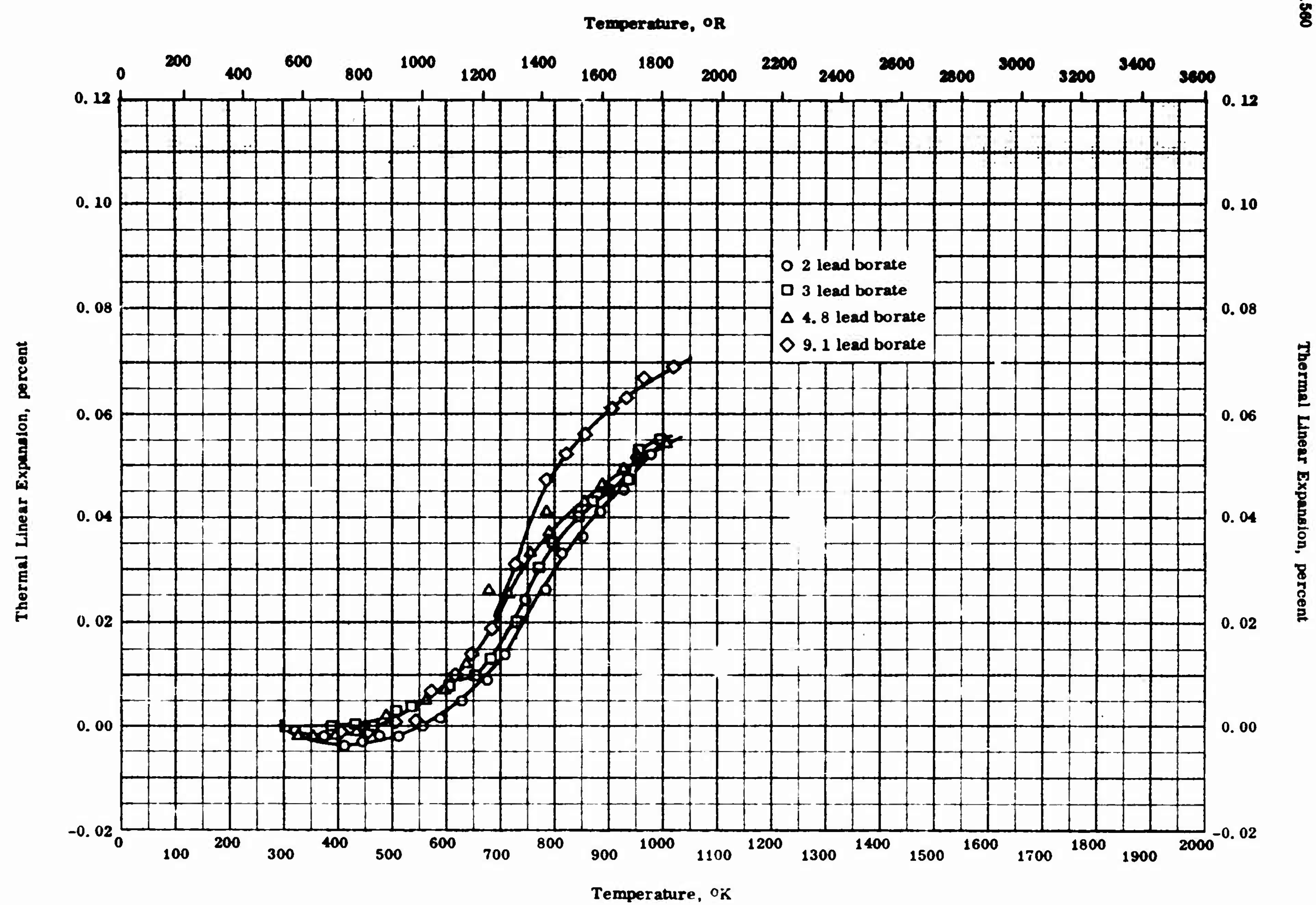


THERMAL LINEAR EXPANSION -- ZINC GERMANIUM OXIDE + ZINC ORTHOSILICATE

THERMAL LINEAR EXPANSION -- ZINC GERMANIUM OXIDE + ZINC ORTHOSILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	64-19	293-1273		54.54 ($2ZnO \cdot GeO_2$) and 45.46 ($2ZnO \cdot SiO_2$), corresponds to 66.40 ZnO, 21.34 GeO_2, and 12.26 SiO_2; prepared from c.p. grade ZnO, silicic acid, and GeO_2. [Author's design : Sample C1]	Raw materials mixed together, dried, pressed into 1 cm by 1 cm by 10 cm bars at 500 psi, and heat treated, aggregate expansion measured with heating rate of 125 C hr^{-1}.

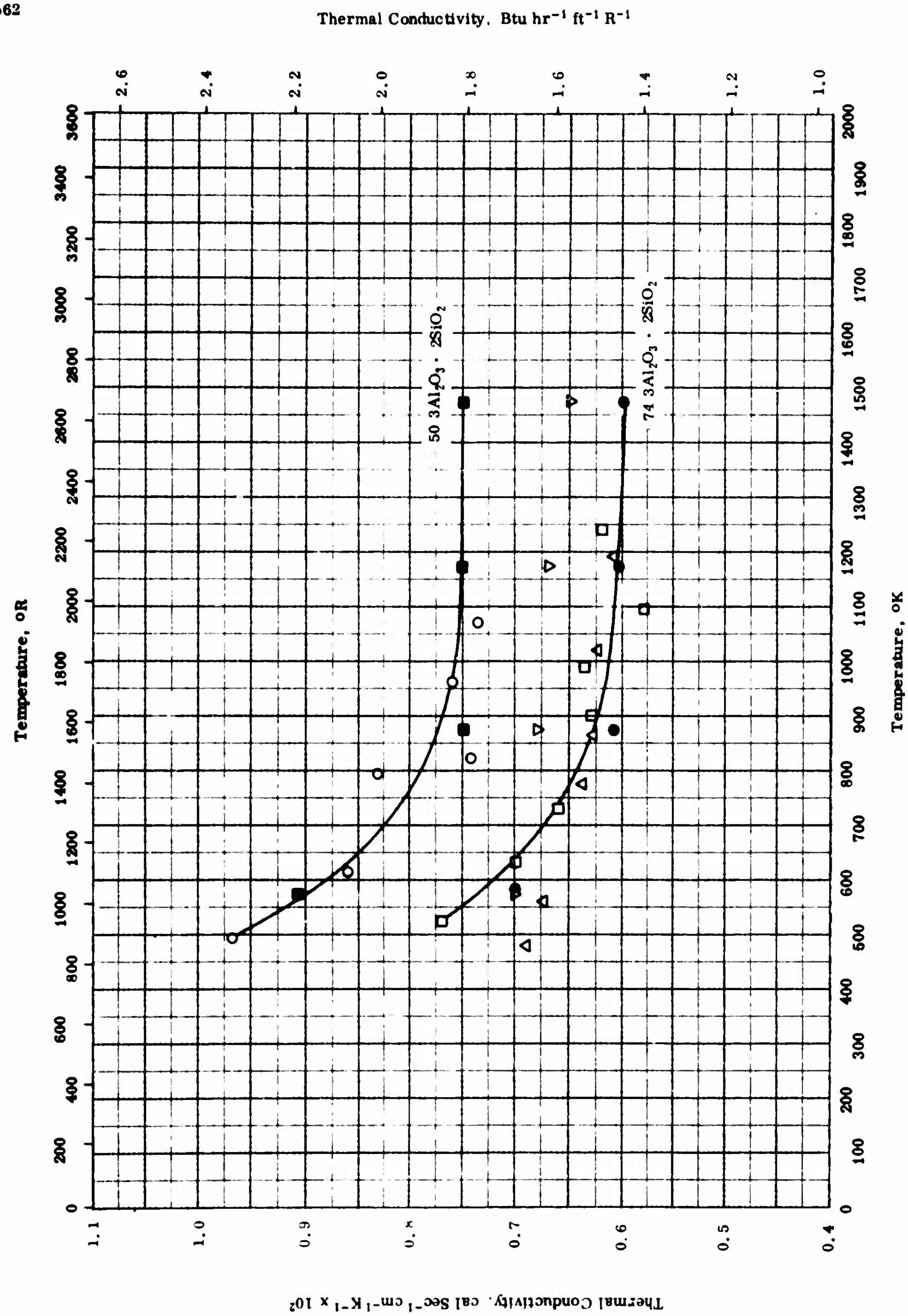


THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE + LEAD BORATE

THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE + LEAD BORATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-3	293-977		59.8 QC6 frit, 38.2 E. P. K. clay, and 2 lead borate; QC6 frit has an oxide analysis of: 80 SiO_2, 12 Li_2O, 8 Al_2O_3 and is made from Li_2CO_3, E. P. K. clay, and flint.	Tested at 2 - 3 C min^{-1} rise.
□	53-3	293-991		59.2 QC6 frit, 37.9 E. P. K. clay, and 3 lead borate; same as above.	Same as above.
△	53-3	298-1005		58.1 QC6 frit, 37.1 E. P. K. clay, and 4.8 lead borate; same as above.	Same as above.
◇	53-3	293-1019		55.5 QC6 frit, 35.4 E. P. K. clay, and 9.1 lead borate; same as above.	Same as above.



THERMAL CONDUCTIVITY -- ALUMINUM SILICATE + ALUMINUM OXIDE

THERMAL CONDUCTIVITY -- ALUMINUM SILICATE + ALUMINUM OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-1	493-1070	± 4	50 $3Al_2O_3 \cdot 2SiO_2$ (mullite) and 50 Al_2O_3; bulk density 2.68 g cm^{-3} and total porosity 23.8 %.	Fired at 1750 C; data corrected to zero porosity.
□	59-1	523-1241	± 4	74 $3Al_2O_3 \cdot 2SiO_2$ (mullite) and 26 Al_2O_3; bulk density 2.35 g cm^{-3} and total porosity 29.3 %.	Fired at 1750 C; data corrected to zero porosity.
△	59-1	481-1188	± 4	90 $3Al_2O_3 \cdot 2SiO_2$ (mullite) and 10 Al_2O_3; bulk density 2.42 g cm^{-3} and total porosity 25.3 %.	Fired at 1750 C; data corrected to zero porosity.
▽	54-3	573-1473		88.9 $3Al_2O_3 \cdot 2SiO_2$ (mullite) and 11.1 Al_2O_3.	Corresponding to 9 vol. % of Al_2O_3.
●	54-3	573-1473		74.5 $3Al_2O_3 \cdot 2SiO_2$ (mullite) and 25.5 Al_2O_3.	Corresponding to 20.5 vol % of Al_2O_3.
■	54-3	573-1473		50.5 $3Al_2O_3 \cdot 2SiO_2$ (mullite) and 49.5 Al_2O_3.	Corresponding to 44.0 vol. % of Al_2O_3

PROPERTIES OF ALUMINUM SILICATE + MAGNESIUM OXIDE

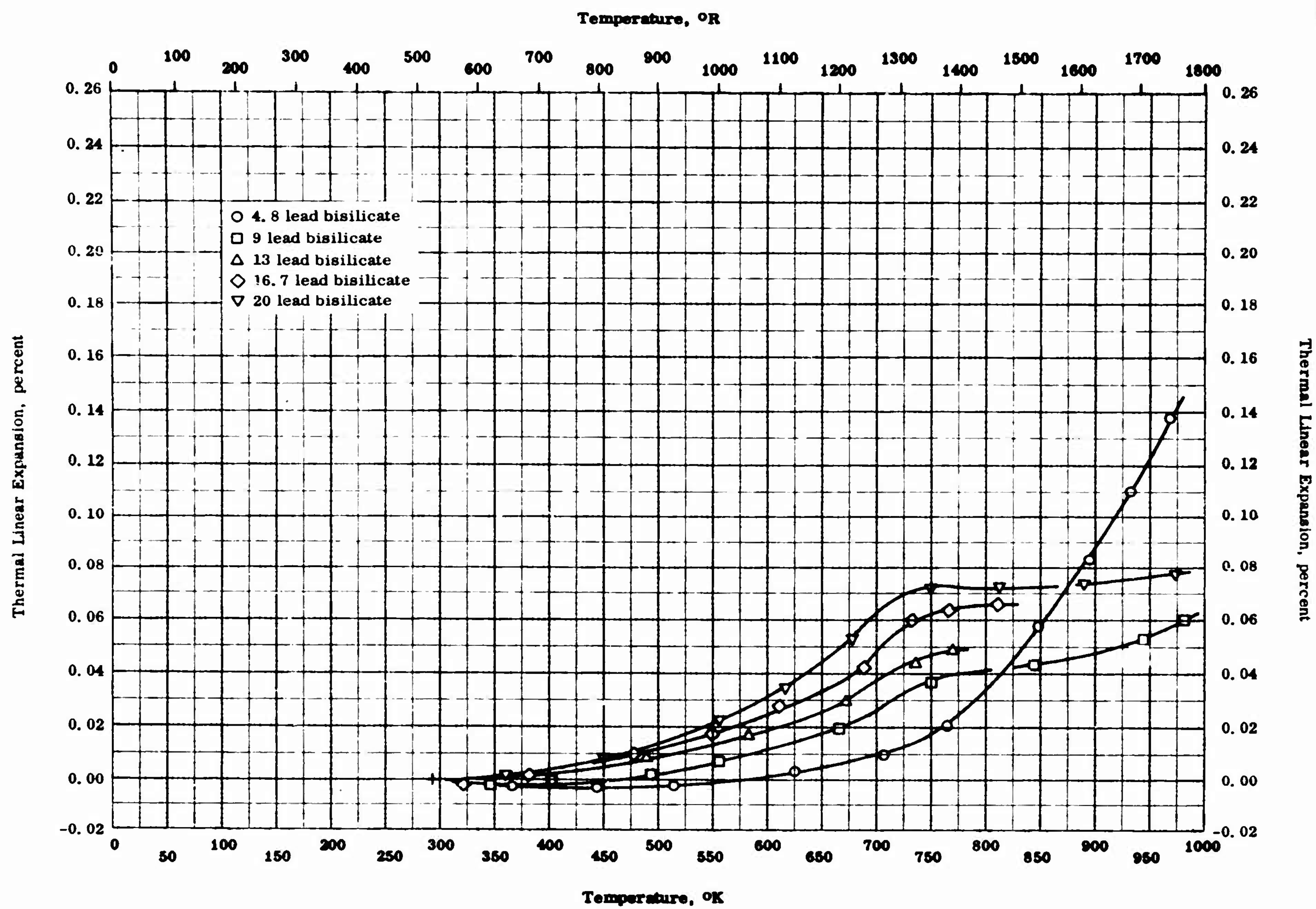
REPORTED VALUES

Melting Point	K	R
O 3 Magnesia	1930 ± 30	3660 ± 54

PROPERTIES OF ALUMINUM SILICATE + MAGNESIUM OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	50-14	1900-1960		Kyanite with 3 magnesia.	M. P. determined by repeated freezing and melting of sample.

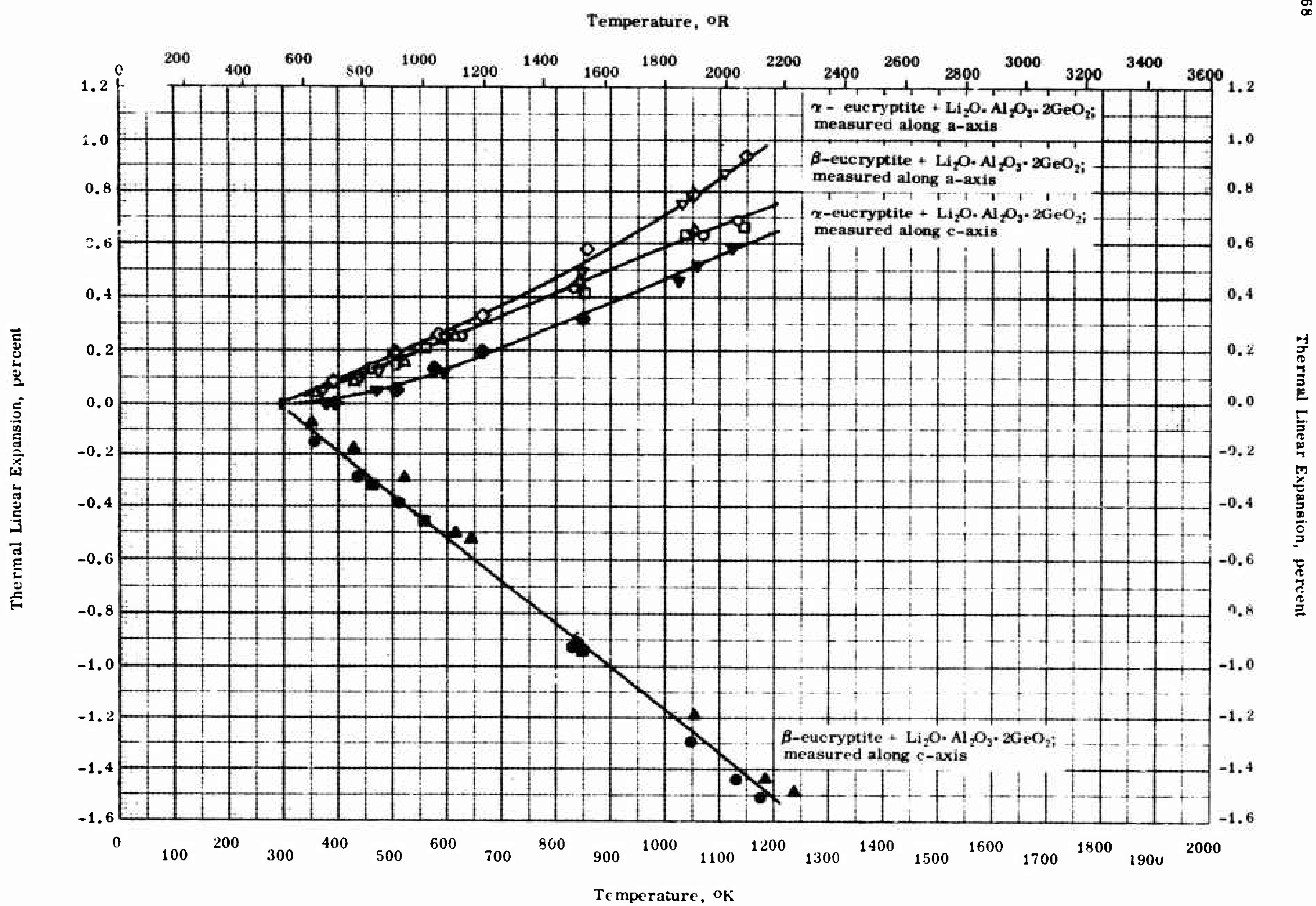


THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE + LEAD BISILICATE

THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE + LEAD BISILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-3	293-968		58.1 QC6 frit, 37.1 E. P. K. clay, and 4.8 lead bisilicate; QC6 frit has an oxide analysis of: 80 SiO_2, 12 Li_2O, 8 Al_2O_3 and is made from Li_2CO_3, E. P. K. clay, and flint.	Tested at 2 - 3 C min^{-1} rise.
□	53-3	293-981		55.5 QC6 frit, 35.5 E. P. K. clay, and 9 lead bisilicate; same as above.	Same as above.
△	53-3	293-769		53.05 QC6 frit, 33.9 E. P. K. clay, and 13 lead bisilicate; same as above.	Same as above.
◇	53-3	293-811		50.8 QC6 frit, 32.5 E. P. K. clay, and 16.7 lead bisilicate; same as above.	Same as above.
▽	53-3	293-972		48.8 QC6 frit, 21.2 E. P. K. clay, and 20 lead bisilicate; same as above.	Same as above.



THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE + LITHIUM ALUMINUM GERMANIUM OXIDE

THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE + LITHIUM ALUMINUM GERMANIUM OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	64-25	295-1133		95.02 $Li_2O \cdot Al_2O_3 \cdot 2SiO_2$ (β-eucryptite) and 4.98 $Li_2O \cdot Al_2O_3 \cdot 2GeO_2$ (3.73 mole percent $Li_2O \cdot Al_2O_3 \cdot 2GeO_2$); prepared from chemically pure lithium carbonate, aluminum hydroxide, silicic acid, and GeO_2.	Weighed batches wet mixed in acetone, dried, heated at 800 C for 24 hrs with intermediate grinding to ensure thorough mixing, melted at 1400 C for 5 to 20 min, and quenched; compositions in β-eucryptite solid solution region were heated at 1150 C for 24 hrs and quenched; measured along a-axis by x-ray diffraction using (426) and (514) reflections from CuK_α radiation; percent expansion calculated from lattice parameters.
●	64-25	301-1173		Same as above.	Same as above except measured along c-axis.
□	64-25	297-1141		85.05 $Li_2O \cdot Al_2O_3 \cdot 2SiO_2$ (β-eucryptite) and 14.95 $Li_2O \cdot Al_2O_3 \cdot 2GeO_2$ (11.5 mole percent $Li_2O \cdot Al_2O_3 \cdot 2GeO_2$); raw materials same as above.	Same as above except measured along a-axis.
■	64-25	305-1129		Same as above.	Same as above except measured along c-axis.
△	64-25	301-1053		75.08 $Li_2O \cdot Al_2O_3 \cdot 2SiO_2$ (β-eucryptite) and 24.92 $Li_2O \cdot Al_2O_3 \cdot 2GeO_2$ (19.7 mole percent $Li_2O \cdot Al_2O_3 \cdot 2GeO_2$; raw materials same as above.	Same as above except measured along a-axis.
▲	64-25	301-1233		Same as above.	Same as above except measured along c-axis.

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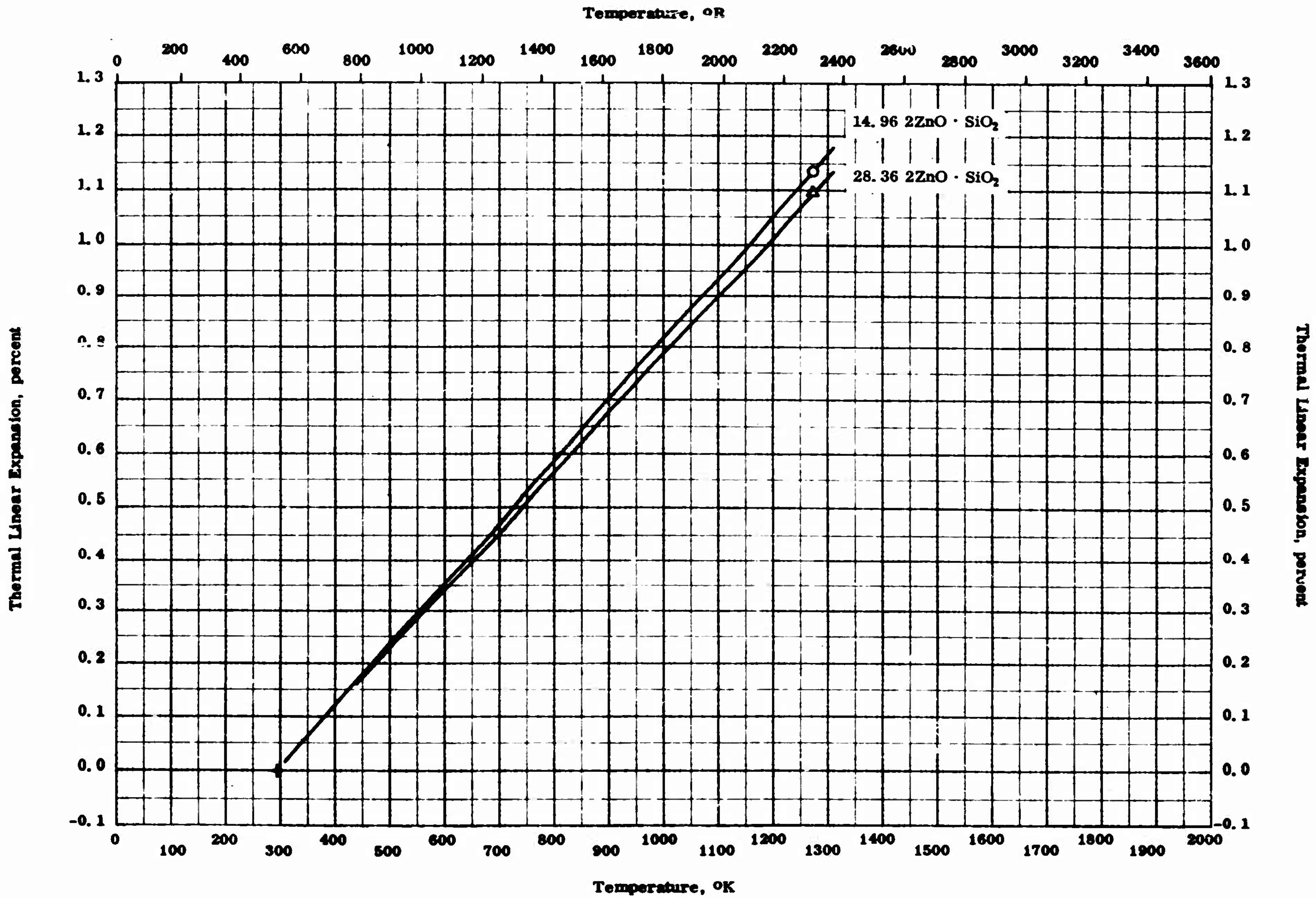
THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE + LITHIUM ALUMINUM GERMANIUM OXIDE (Continued)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▽	64-25	293-1109		85. 05 $Li_2O \cdot Al_2O_3 \cdot 2SiO_2$ (α-eucryptite) and 14. 95 $Li_2O \cdot Al_2O_3 \cdot 2GeO_2$ (11. 5 mole percent $Li_2O \cdot Al_2O_3 \cdot 2GeO_2$); raw materials same as above.	Same as above except compositions in α-eucryptite solid solution were prepared by hydrothermal heat treatment of β-eucryptite solid solution at 700 C under 1 K bar pressure for 2 days; measured along a-axis by x-ray diffraction using (925) and (763) reflections from CuK_α radiation; percent expansion calculated from lattice parameters.
▼	64-25	293-1125		Same as above.	Same as above except measured along c-axis.
◇	64-25	297-1149		75. 08 $Li_2O \cdot Al_2O_3 \cdot 2SiO_2$ (α-eucryptite) and 24. 92 $LiO_2 \cdot Al_2O_3 \cdot 2GeO_2$ (19. 7 mole percent $Li_2O \cdot Al_2O_3 \cdot 2GeO_2$); raw materials same as above.	Same as above except measured along a-axis.
◆	64-25	293-849		Same as above.	Same as above except measured along c-axis.

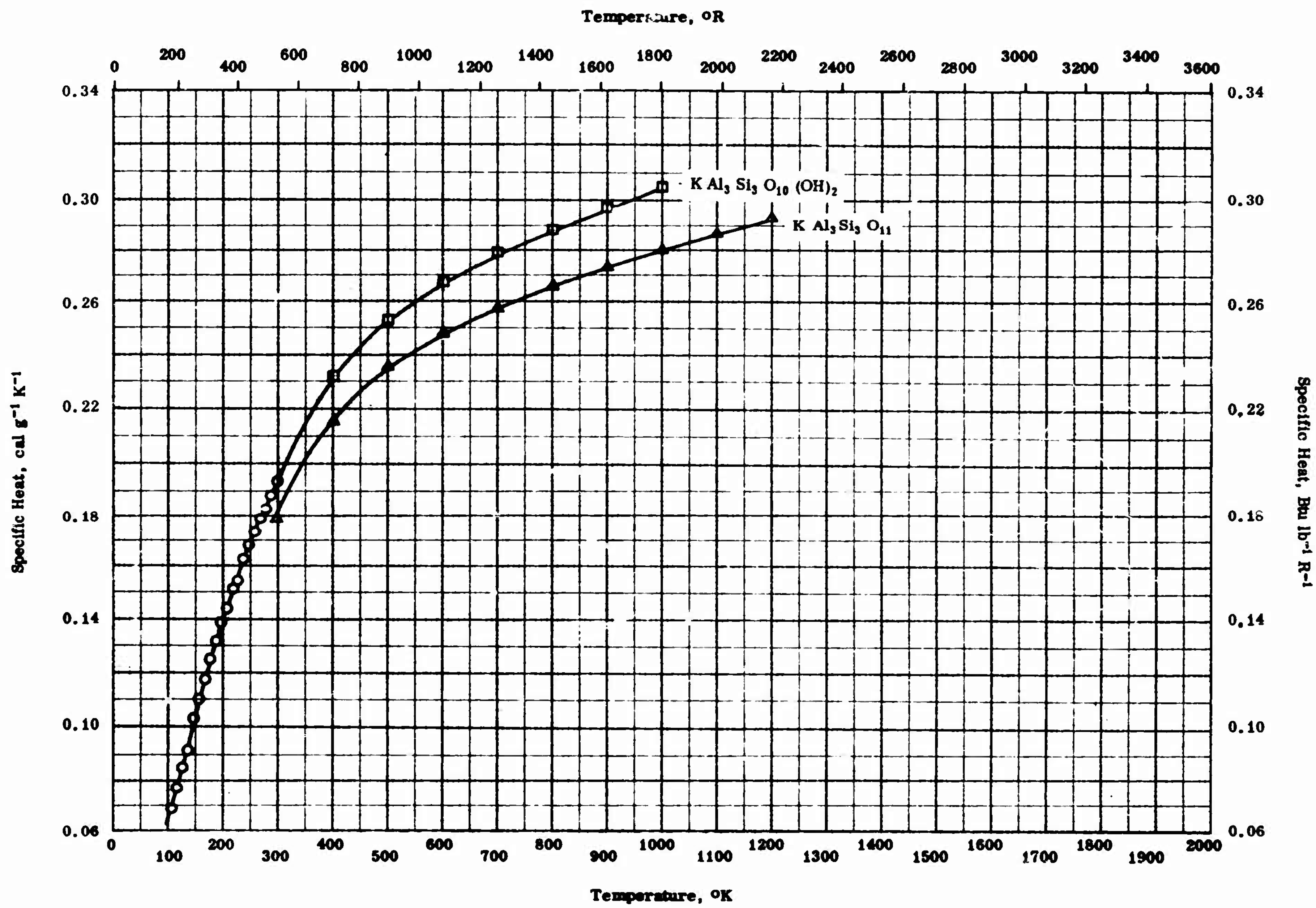


THERMAL LINEAR EXPANSION -- MAGNESIUM ORTHOSILICATE + ZINC ORTHOSILICATE

THERMAL LINEAR EXPANSION -- MAGNESIUM ORTHOSILICATE + ZINC ORTHOSILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
△	64-19	293-1273		71.64 $2MgO \cdot SiO_2$ and 28.36 $2ZnO \cdot SiO_2$; 41.05 MgO, 38.24 SiO_2, and 20.71 ZnO; prepared from c.p. grade ZnO, basic magnesium carbonate, and silicic acid. [Author's design : Sample A5]	Raw materials mixed together, dried, pressed into 1 cm by 1 cm by 10 cm bars at 500 psi, and heat treated.
○	64-19	293-1273		85.04 $2MgO \cdot SiO_2$ and 14.96 $2ZnO \cdot SiO_2$; 48.73 MgO, 40.34 SiO_2, and 10.93 ZnO; same as above. [Author's design : Sample A6]	Same as above.

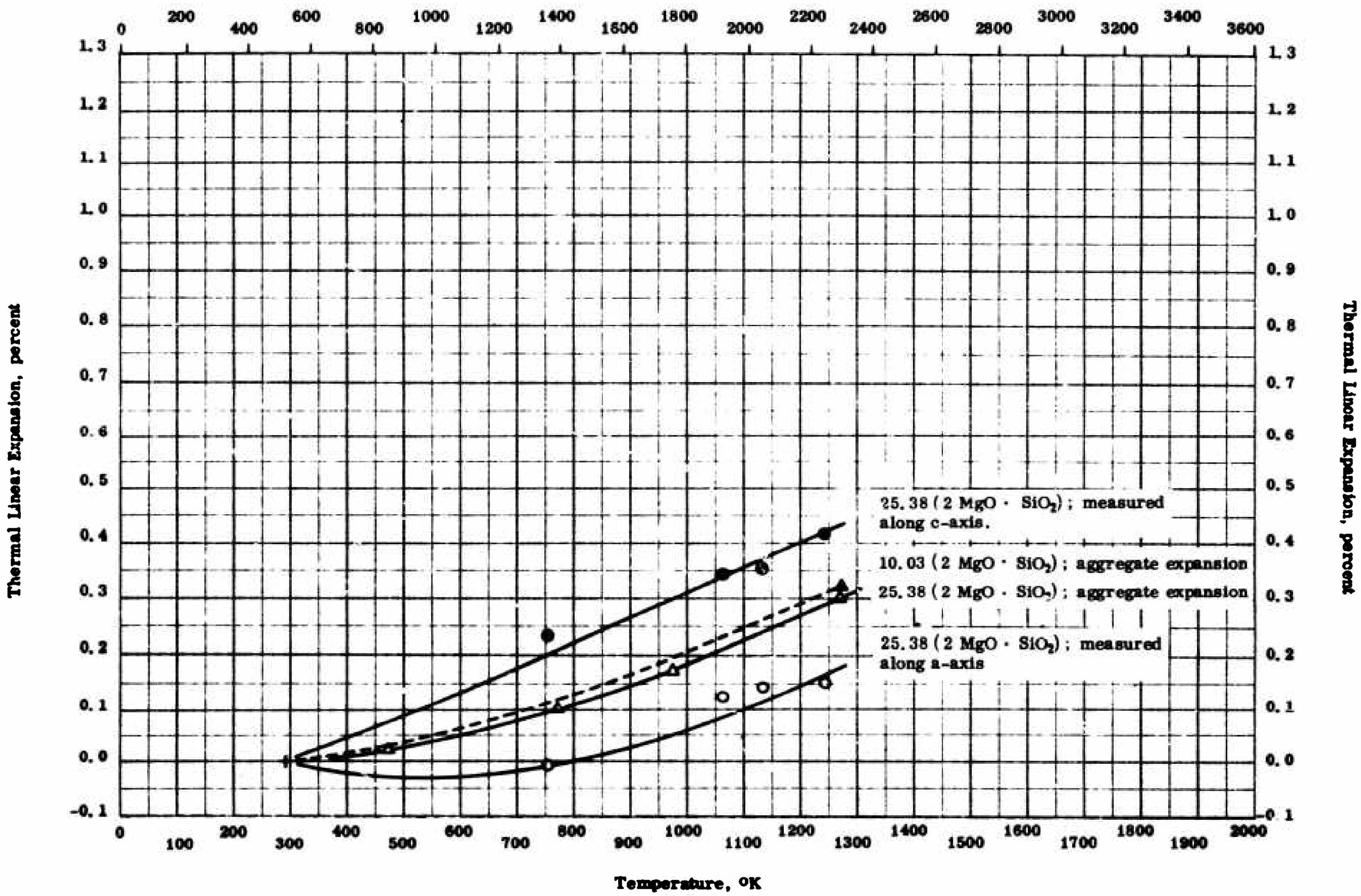


SPECIFIC HEAT -- POTASSIUM ALUMINUM SILICATE + IRON (IC) OXIDE

SPECIFIC HEAT -- POTASSIUM ALUMINUM SILICATE + IRON (IC) OXIDE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-29	50-298	0.3	Muscovite, $KAl_3Si_3O_{10}(OH)_2$ ($K_2O\cdot 3\ Al_2O_3\cdot 6\ SiO_2\cdot 2H_2O$); 45.79 SiO_2, 33.47 Al_2O_3, 10.73 K_2O, 4.47 H_2O, 3.22 Fe_2O_3, 0.99 Na_2O, 0.79 MgO, 0.47 FeO, 0.08 TiO_2 and nil CaO.	Ground to -20 mesh, dried at 110 C.
□	64-13	298-1000	0.2	Muscovite; same as above.	Same as above.
△	62-26	298-1200	0.1	Dehydrated muscovite, $KAl_3Si_3O_{11}$ ($K_2O\cdot 3\ Al_2O_3\cdot 6\ SiO_2$); 47.97 SiO_2, 35.00 Al_2O_3, 11.22 K_2O, 3.37 Fe_2O_3, 1.04 Na_2O, 0.83 MgO, 0.49 FeO, and 0.08 TiO_2.	Prepared by heating muscovite 3.5 hrs at 900-1000 K.

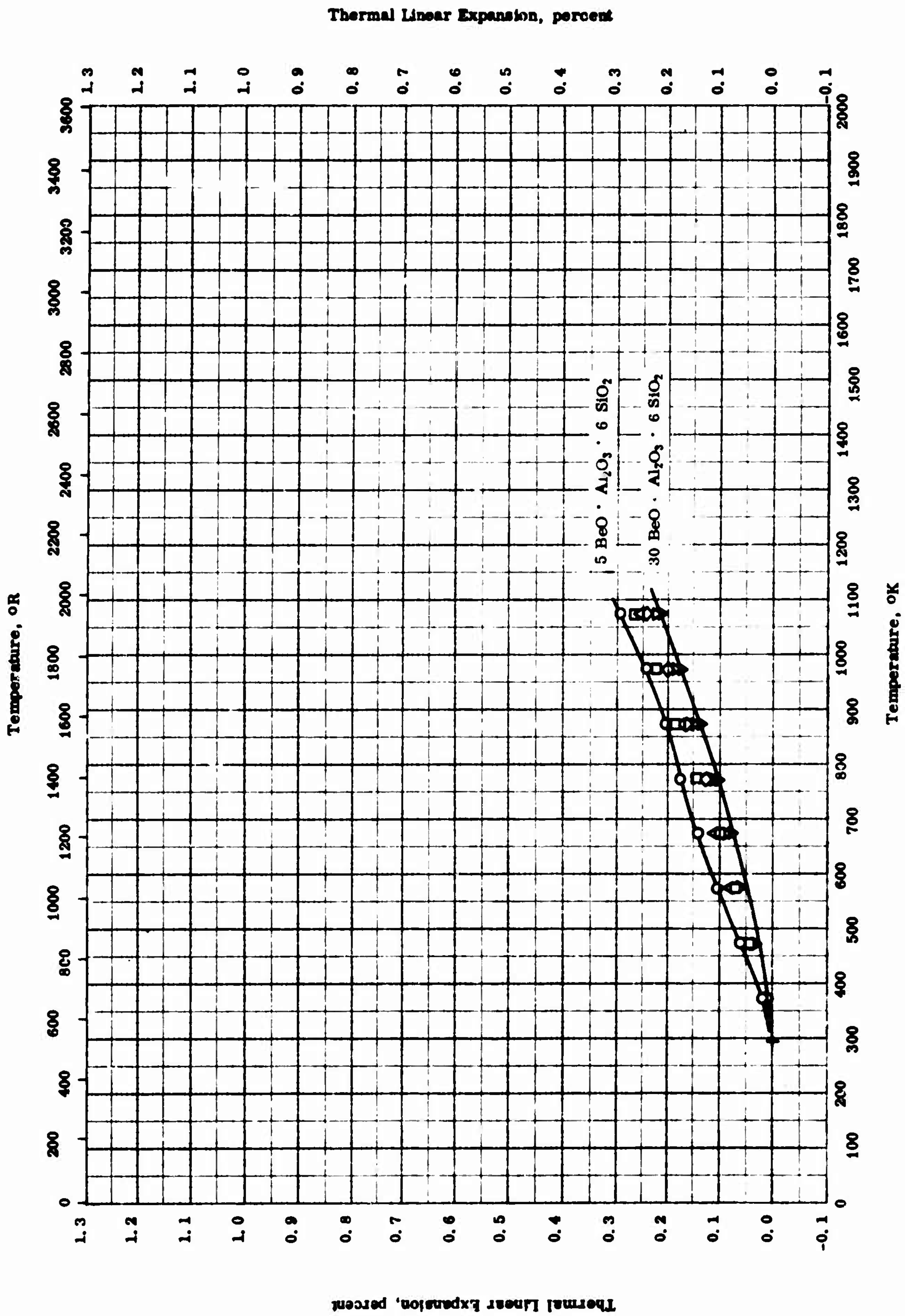


THERMAL LINEAR EXPANSION -- ZINC ORTHOSILICATE + MAGNESIUM ORTHOSILICATE

THERMAL LINEAR EXPANSION -- ZINC ORTHOSILICATE + MAGNESIUM ORTHOSILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	64-19	293-1241		74.62 (2 ZnO · SiO_2) and 25.38 (2 MgO · SiO_2), corresponds to 54.50 ZnO, 30.96 SiO_2, and 14.54 MgO; prepared from c.p. grade ZnO, basic magnesium carbonate, and silicic acid. [Author's design: Sample A4]	Raw materials mixed together, dried, and heat treated; measured along a-axis by x-ray diffraction.
●	64-19	293-1241		Same as above.	Same as above except measured along c-axis.
△	64-19	293-1271		Same as above.	Raw materials mixed together, dried, pressed into 1 cm by 1 cm by 10 cm bars at 500 psi, and heat treated; aggregate expansion measured with heating rate of 125 C hr^{-1}.
▲	64-19	293-1273		89.97 (2 ZnO · SiO_2) and 10.03 (2 MgO · SiO_2), corresponds to 65.71 ZnO, 28.54 SiO_2, and 5.75 MgO; raw materials same as above. [Author's design: Sample A2]	Same as above.



THERMAL LINEAR EXPANSION -- ZIRCONIUM ORTHOSILICATE + BERYLLIUM ALUMINUM SILICATE

THERMAL LINEAR EXPANSION -- ZIRCONIUM ORTHOSILICATE + BERYLLIUM ALUMINUM SILICATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	46-8	293-1073		95 $ZrSiO_4$ and 5 $BeO \cdot Al_2O_3 \cdot 6\ SiO_2$, zircon + beryl system.	
□	46-8	293-1073		90 $ZrSiO_4$ and 10 $BeO \cdot Al_2O_3 \cdot 6\ SiO_2$.	
△	46-8	293-1073		85 $ZrSiO_4$ and 15 $BeO \cdot Al_2O_3 \cdot 6\ SiO_2$.	
◇	46-8	293-1073		80 $ZrSiO_4$ and 20 $BeO \cdot Al_2O_3 \cdot 6\ SiO_2$.	
▽	46-8	293-1073		75 $ZrSiO_4$ and 25 $BeO \cdot Al_2O_3 \cdot 6\ SiO_2$.	
▼	46-8	293-1073		70 $ZrSiO_4$ and 30 $BeO \cdot Al_2O_3 \cdot 6\ SiO_2$.	

PROPERTIES OF BARIUM TITANATE + CALCIUM TITANATE

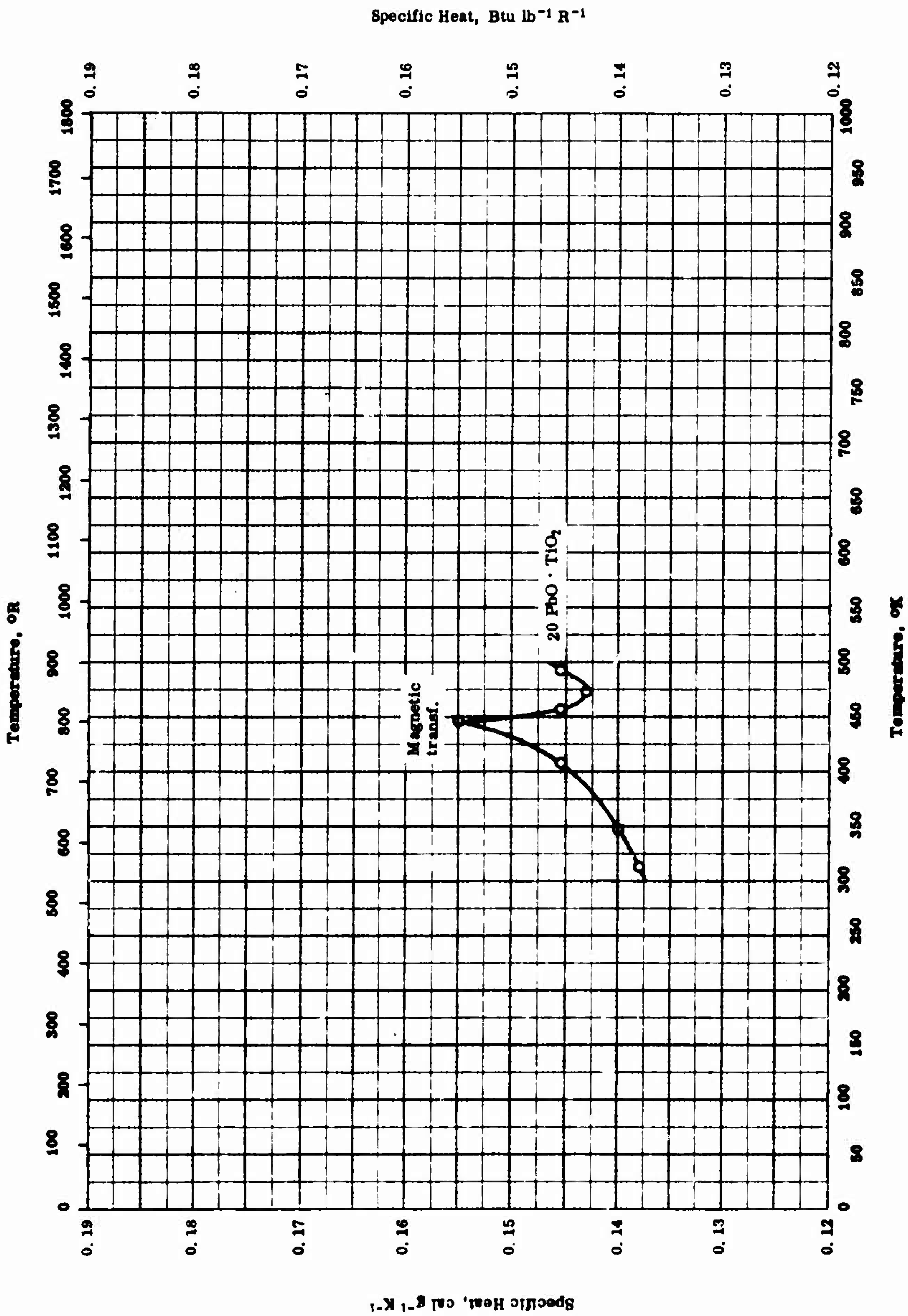
REPORTED VALUES

Melting Point	K	R
O $18\,CaO \cdot TiO_2$	1853	3336

PROPERTIES OF BARIUM TITANATE + CALCIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	55-25	1853		82 $BaO \cdot TiO_2$ and 18 $CaO \cdot TiO_2$.	

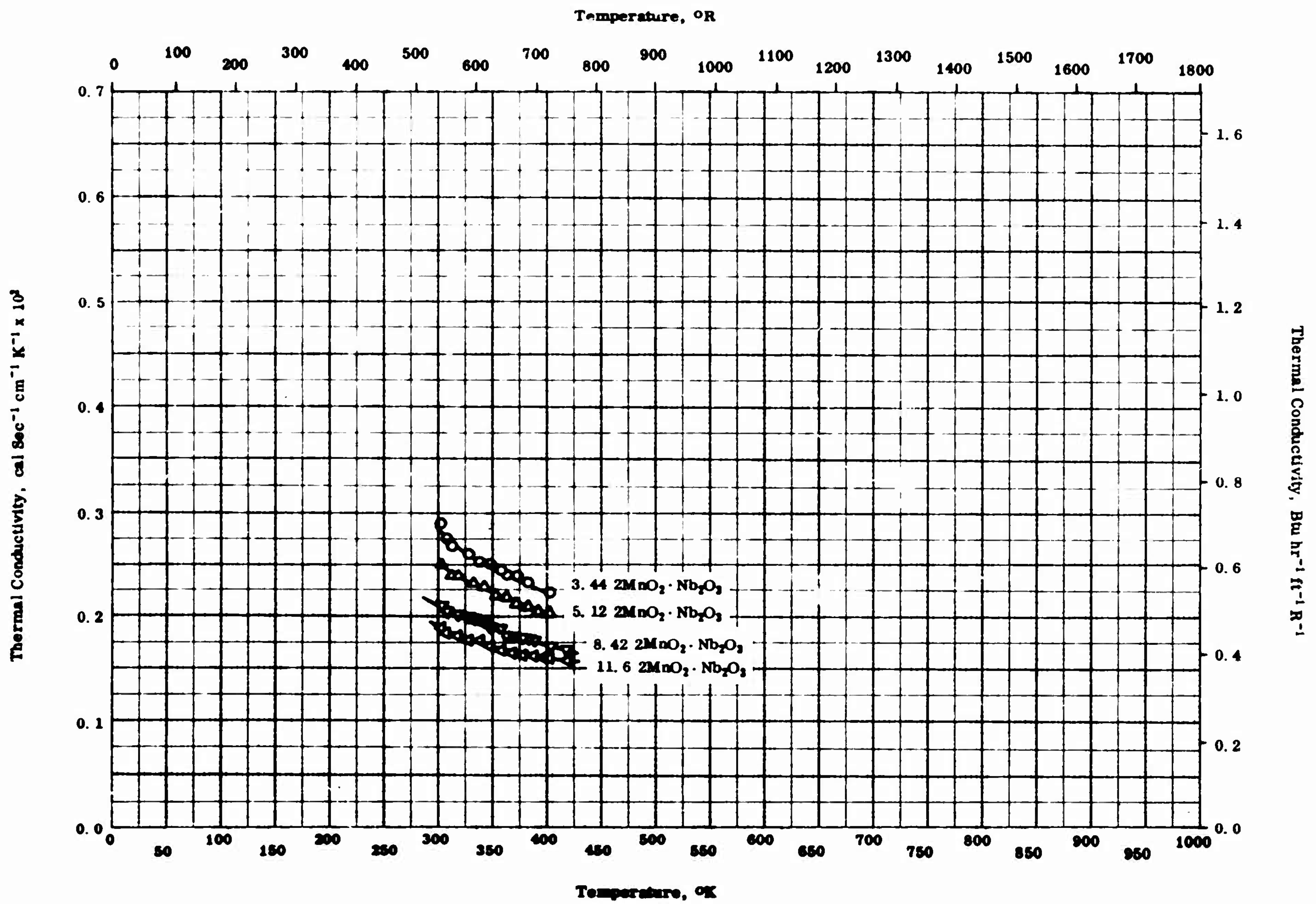


SPECIFIC HEAT -- BARIUM TITANATE + LEAD TITANATE

SPECIFIC HEAT -- BARIUM TITANATE + LEAD TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	51-18	313-493		80 $BaO \cdot TiO_2$ and 20 $PbO \cdot TiO_2$.	Fired at 1200 - 1400 C.

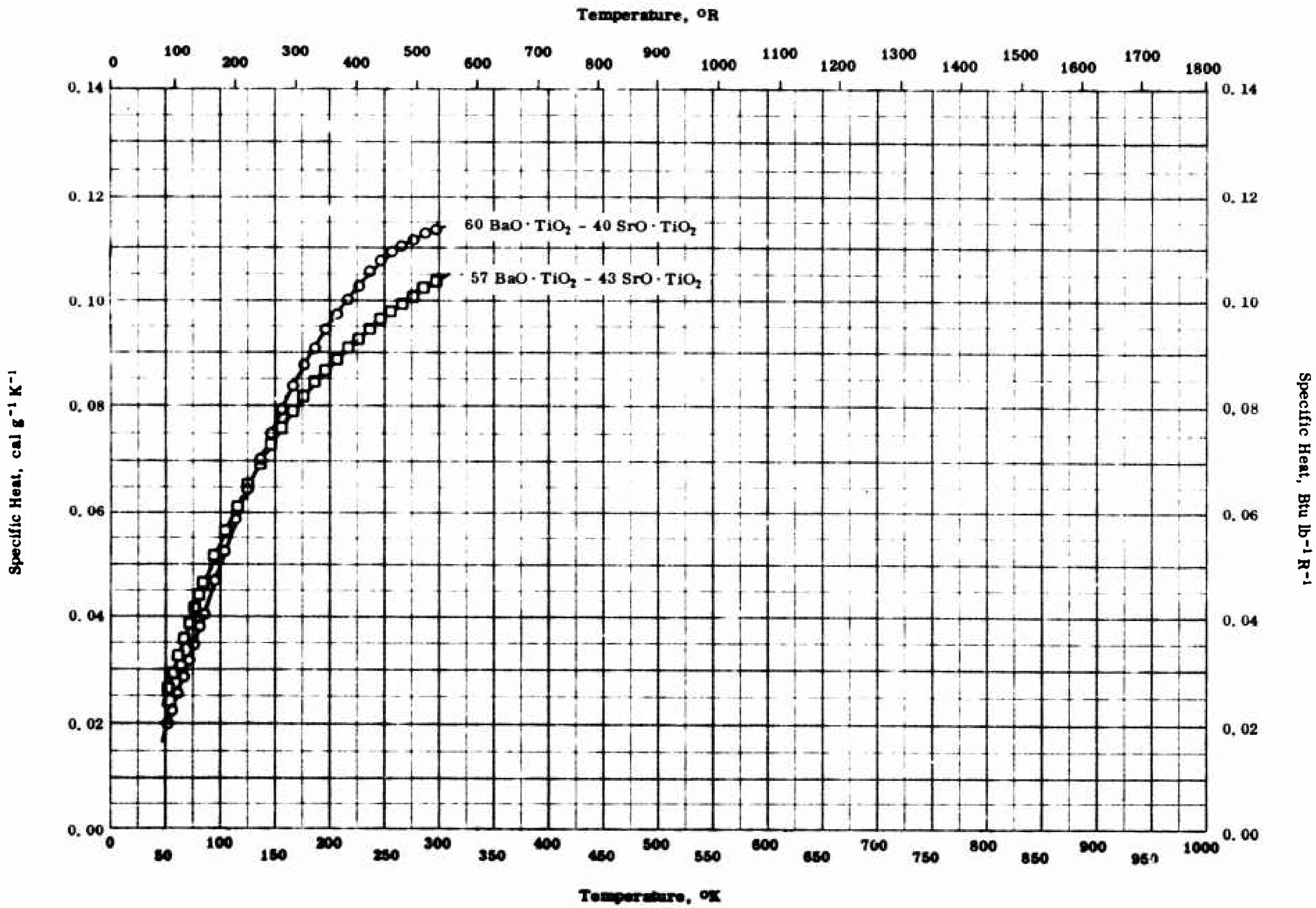


THERMAL CONDUCTIVITY -- BARIUM TITANATE + MANGANESE NIOBATE

THERMAL CONDUCTIVITY -- BARIUM TITANATE + MANGANESE NIOBATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	61-2	303-403		96.56 $BaO \cdot TiO_2$ and 3.44 $2MnO_2 \cdot Nb_2O_3$.	Corresponding to 2.0 mole % $2MnO_2 \cdot Nb_2O_3$.
△	61-2	303-403		94.88 $BaO \cdot TiO_2$ and 5.12 $2MnO_2 \cdot Nb_2O_3$.	Corresponding to 3.0 mole % $2MnO_2 \cdot Nb_2O_3$.
▽	61-2	303-418		91.58 $BaO \cdot TiO_2$ and 8.42 $2MnO_2 \cdot Nb_2O_3$.	Corresponding to 5.0 mole % $2MnO_2 \cdot Nb_2O_3$.
◁	61-2	303-418		88.4 $BaO \cdot TiO_2$ and 11.6 $2MnO_2 \cdot Nb_2O_3$.	Corresponding to 7.0 mole % $2MnO_2 \cdot Nb_2O_3$.

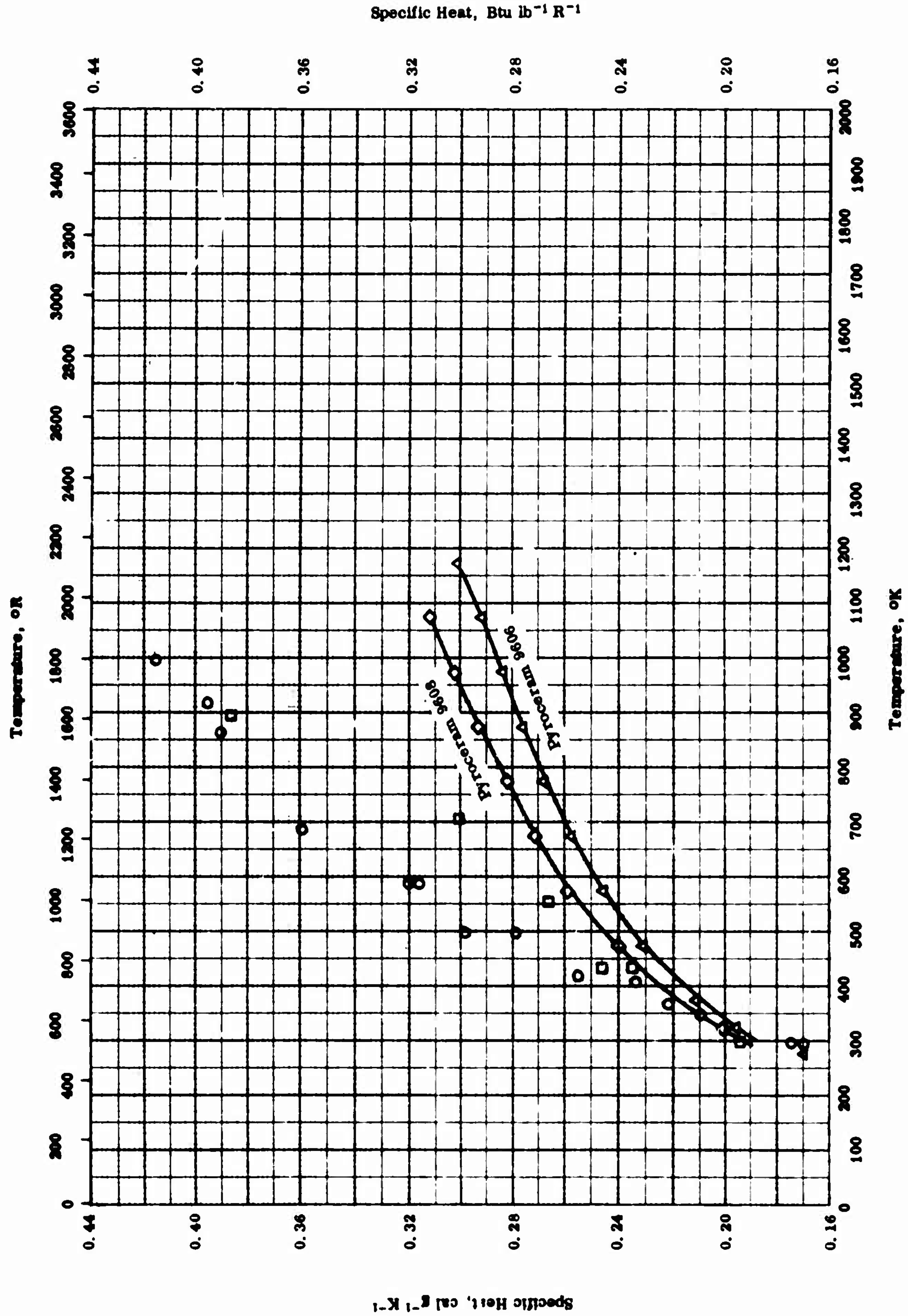


SPECIFIC HEAT -- BARIUM TITANATE + STRONTIUM TITANATE

SPECIFIC HEAT -- BARIUM TITANATE + STRONTIUM TITANATE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-18	53-298	0.10	60.2 $BaO \cdot TiO_2$ and 39.8 $SrO \cdot TiO_2$; crystalline solution.	Prolonged heating at 1400 C to assure uniform product.
□	52-19	53-298	0.10	Equimolar solid solution; 57.38 $2BaO \cdot TiO_2$ (99.2 pure) and 42.62 $2SrO \cdot TiO_2$ (99.5 pure).	

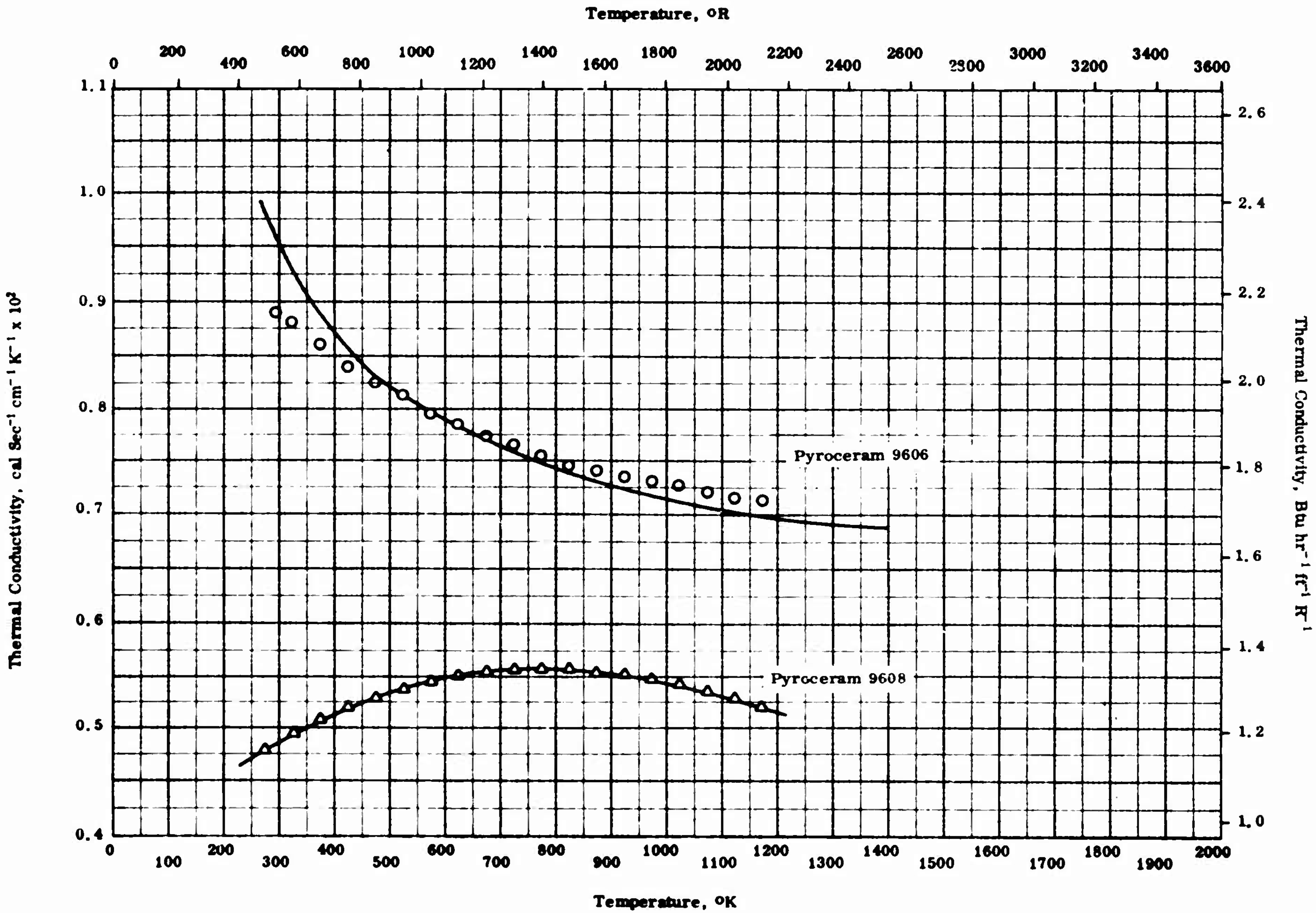


SPECIFIC HEAT -- GLASS CERAMIC
(Pyroceram)

SPECIFIC HEAT -- GLASS CERAMIC
(Pyroceram)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-2	298-898	10	Pyroceram 9608 [Author's design.: sample 1.]	Coated with silver paste to make them opaque.
□	63-2	298-898	10	Pyroceram 9608 [Author's design.: sample 2.]	Same as above.
△	58-8	273-1173		Pyroceram 9606; density 162.3 lb ft^{-3}.	
◇	58-8	323-1073		Pyroceram 9608; density 156 lb ft^{-3}.	

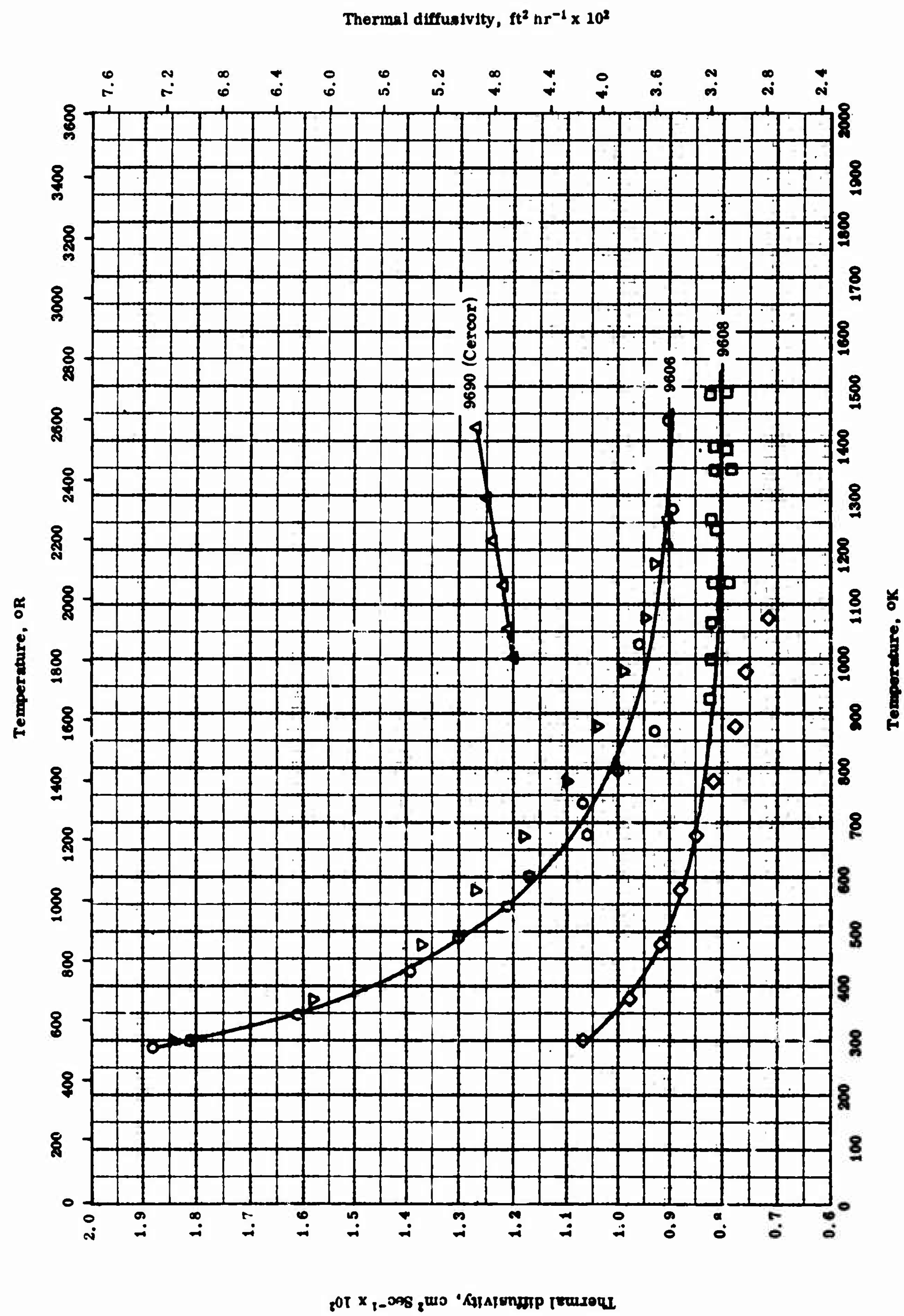


THERMAL CONDUCTIVITY -- GLASS CERAMIC
(Pyroceram)

THERMAL CONDUCTIVITY -- GLASS CERAMIC
(Pyroceram)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-8	293-1173		Pyroceram 9606.	
△	58-8	273-1173		Pyroceram 9608.	

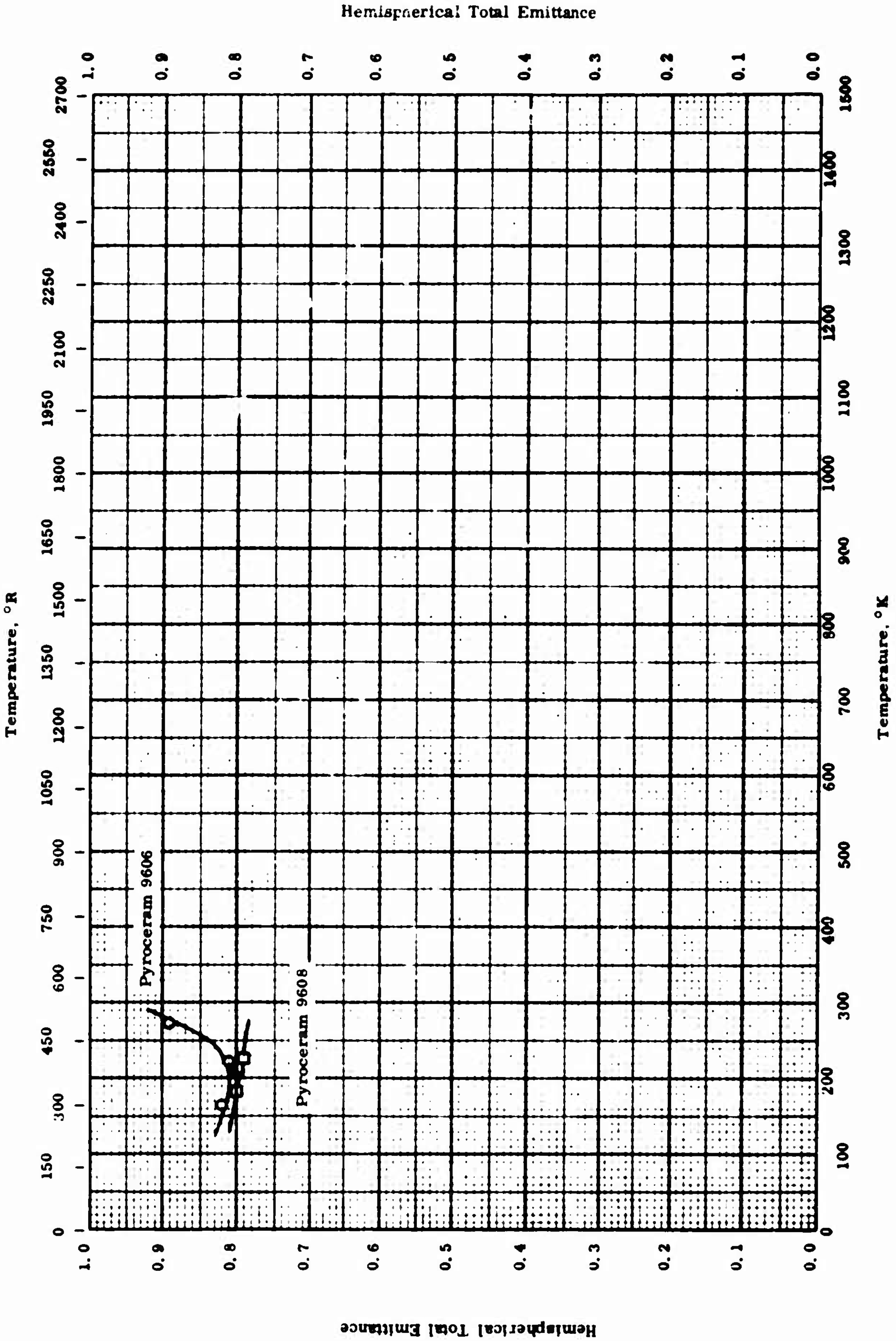


THERMAL DIFFUSIVITY -- GLASS CERAMIC
(Pyroceram)

THERMAL DIFFUSIVITY -- GLASS CERAMIC
(Pyroceram)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-2	283-1436	±5-10	Pyroceram 9606 from Corning Glass works.	
□	63-2	926-1490	±5-10	Pyroceram 9608 from Corning Glass works.	
△	63-2	1000-1423	±5-10	Pyroceram 9690, Cercor from Corning Glass Works.	
▽	62-1	298-1173	15	Pyroceram 9606 from Corning Glass Works.	
◇	62-1	298-1073	15	Pyroceram 9608 from Corning Glass Works.	

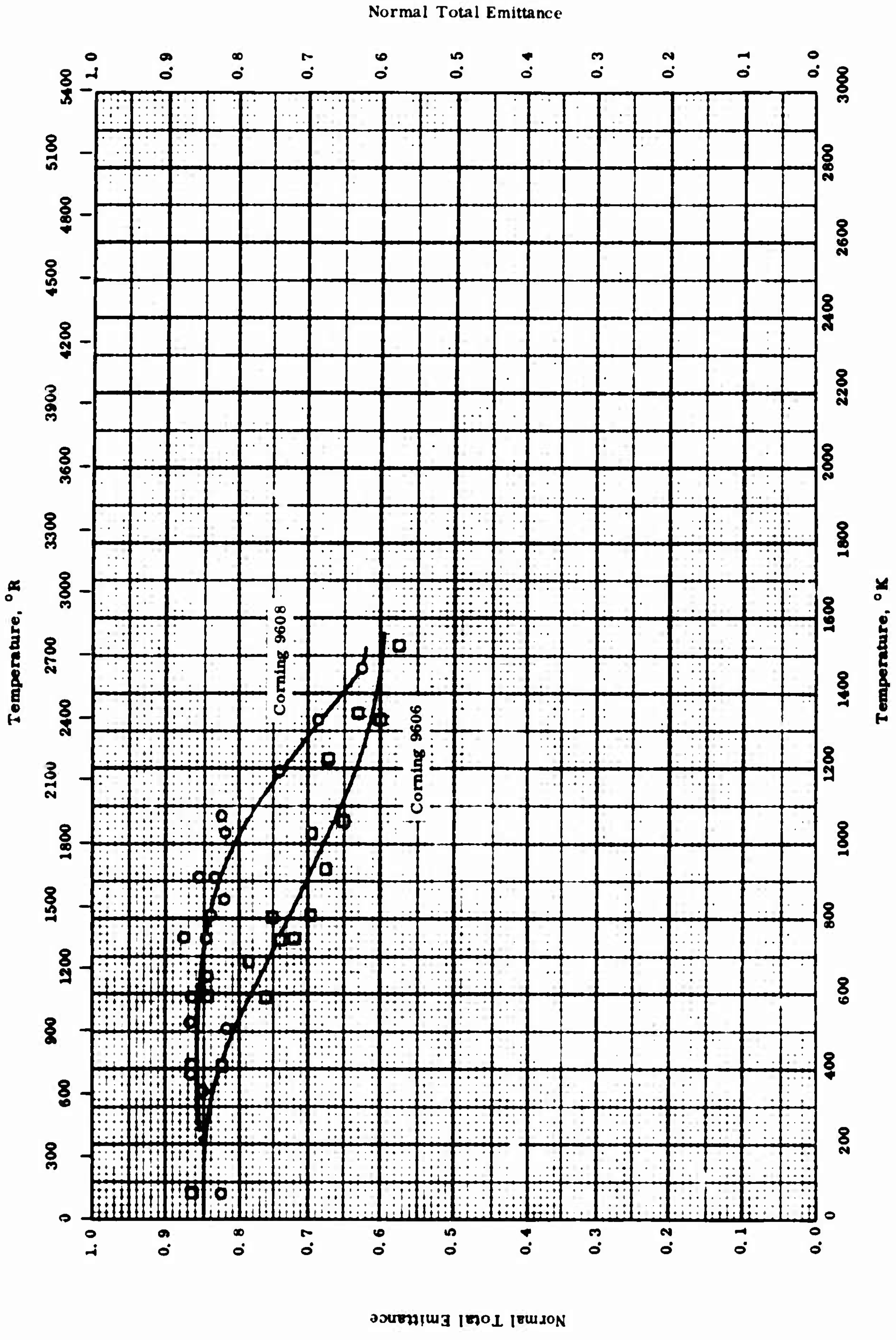


HEMISPHERICAL TOTAL EMITTANCE -- GLASS CERAMICS
(Pyrocerams)

HEMISPHERICAL TOTAL EMITTANCE -- GLASS CERAMICS
(Pyrocerams)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	63-27	165-273	± 2.5	Pyroceram 9606; ($2 MgO \cdot 2 Al_2O_3 \cdot 5 SiO_2$) - ($TiO_2$); specific gravity 2.61; 0.125 in. thickness.	Measured in vacuum ($\leq 0.2 \times 10^{-4}$ mm Hg).
□	63-27	182-223	± 2.5	Pyroceram 9608; ($LiO_2 \cdot Al_2O_3 \cdot 4 SiO_2$) - ($TiO_2$) - ($2 MgO \cdot 2 Al_2O_3 \cdot 5 SiO_2$); specific gravity 2.50; 0.125 in. thickness.	Same as above.

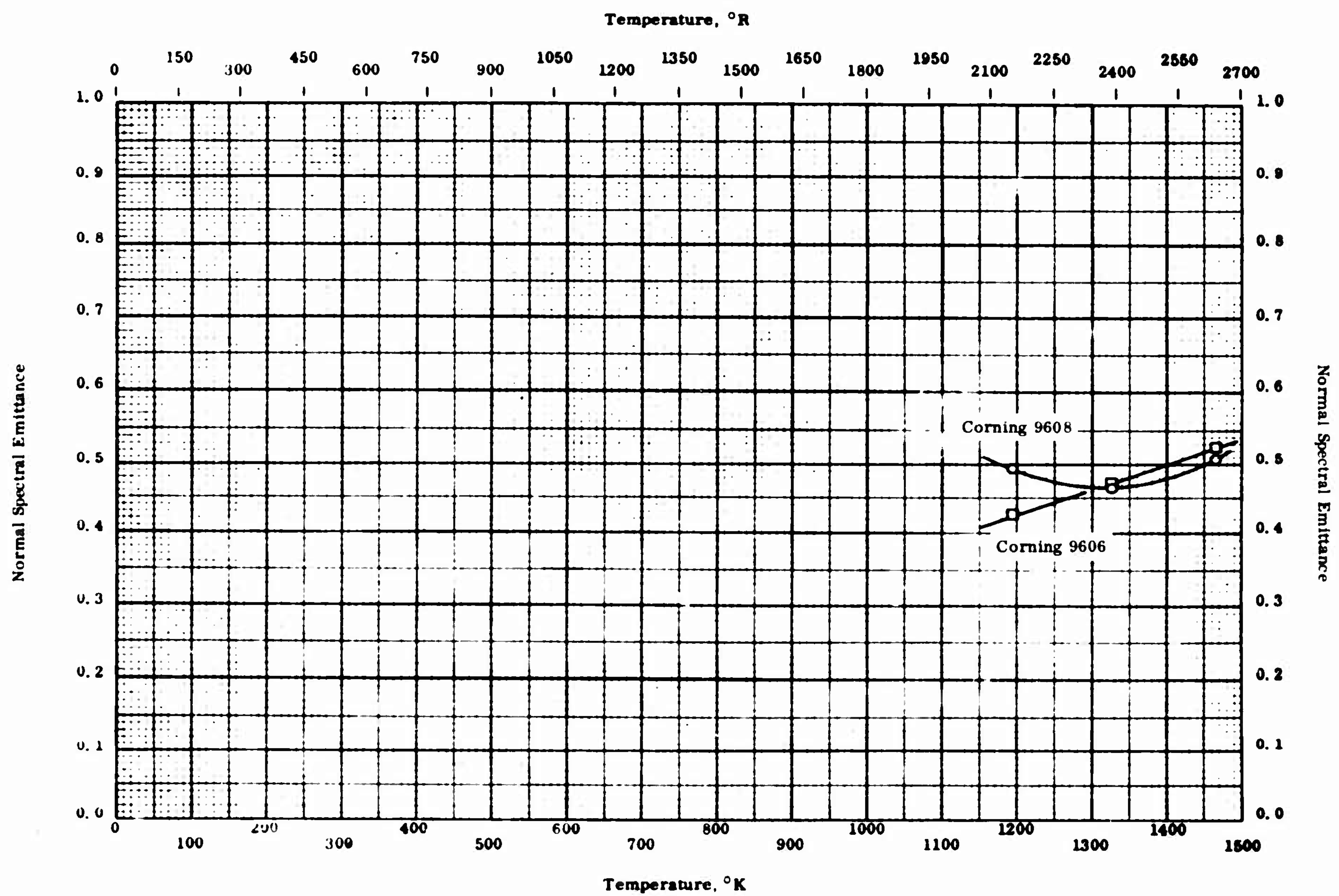


NORMAL TOTAL EMITTANCE -- GLASS CERAMICS
(Pyrocerams)

NORMAL TOTAL EMITTANCE -- GLASS CERAMICS
(Pyrocerams)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-15	77-1461		Corning 9608.	
□	59-15	77-1522		Corning 9606.	

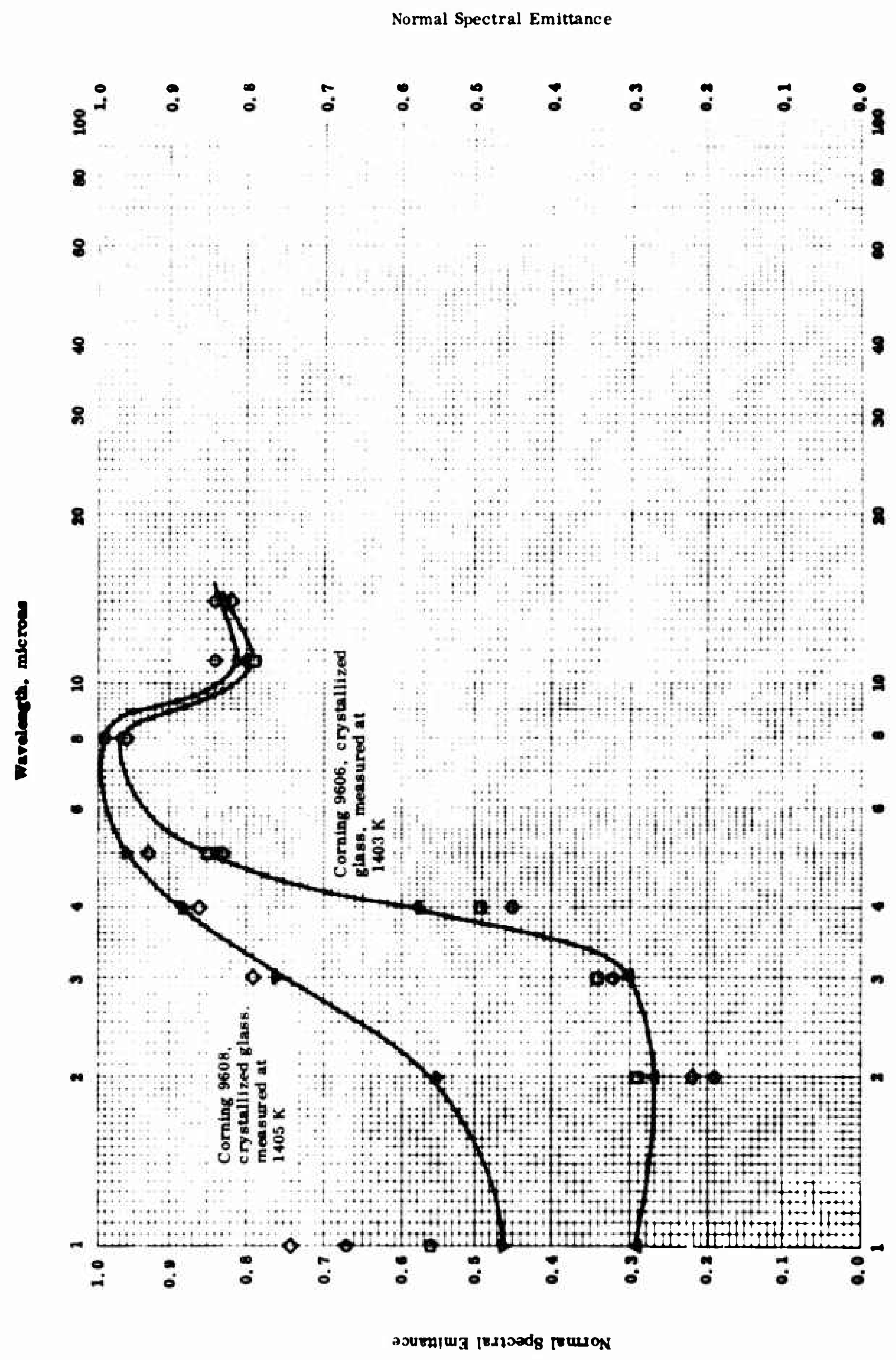


NORMAL SPECTRAL EMITTANCE -- GLASS CERAMICS
(Pyrocerams)

NORMAL SPECTRAL EMITTANCE -- GLASS CERAMICS
(Pyrocerams)

REFERENCE INFORMATION

Symbol	Ref.	Wavelength μ	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-15	0.665	1194-1466		Corning 9608.	
□	59-15	0.665	1194-1464		Corning 9606.	

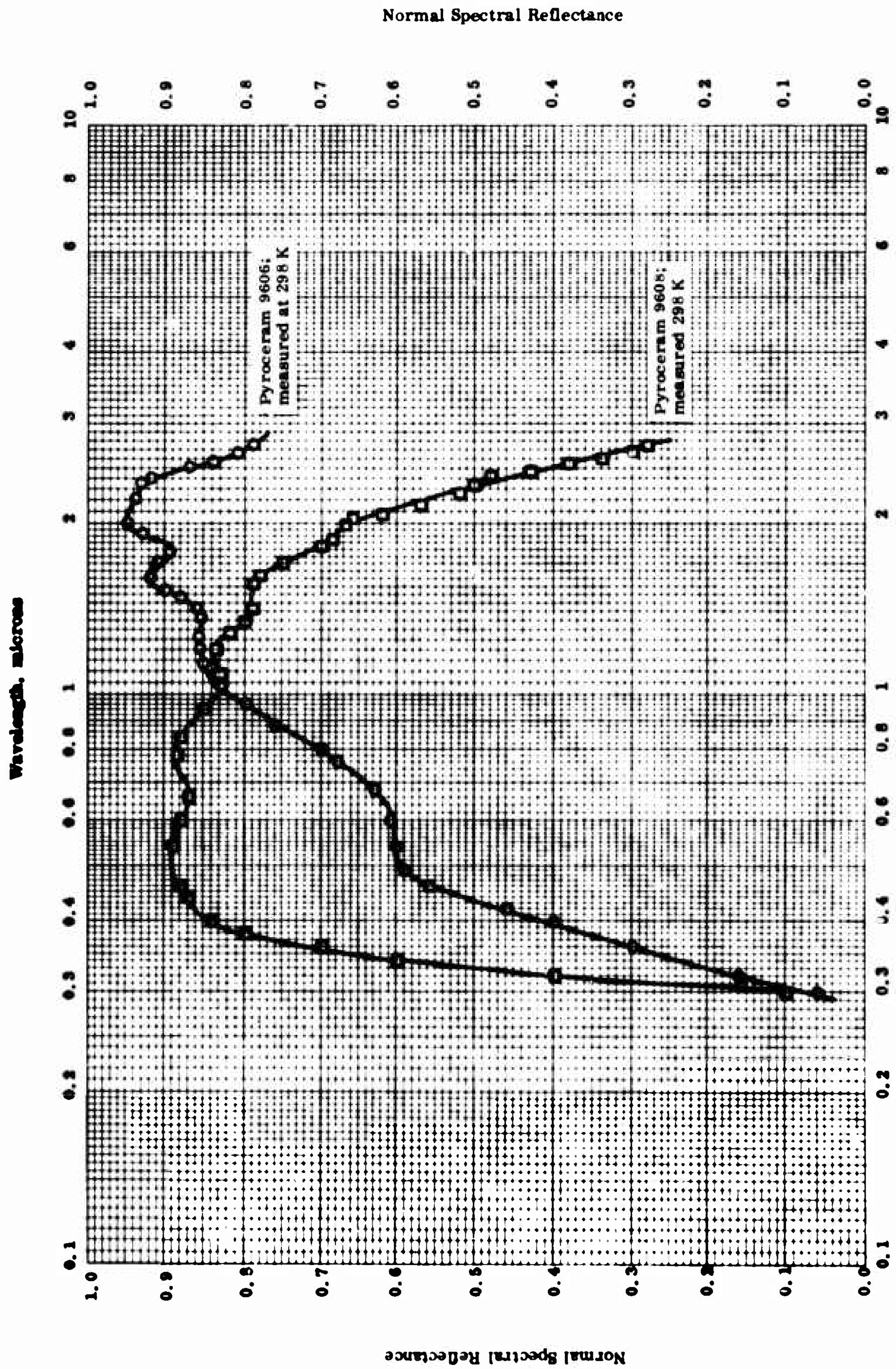


NORMAL SPECTRAL EMITTANCE -- GLASS CERAMICS (Pyrocerams)

NORMAL SPECTRAL EMITTANCE -- GLASS CERAMICS
(Pyrocerams)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	64-12	813	1-14		Corning 9606, crystallized glass.	
□	64-12	1205	1-14		Same as above.	
△	64-12	1403	1-14		Same as above.	
◇	64-12	1018	1-14		Corning 9608, crystallized glass.	
▽	64-12	1405	1-14		Same as above.	

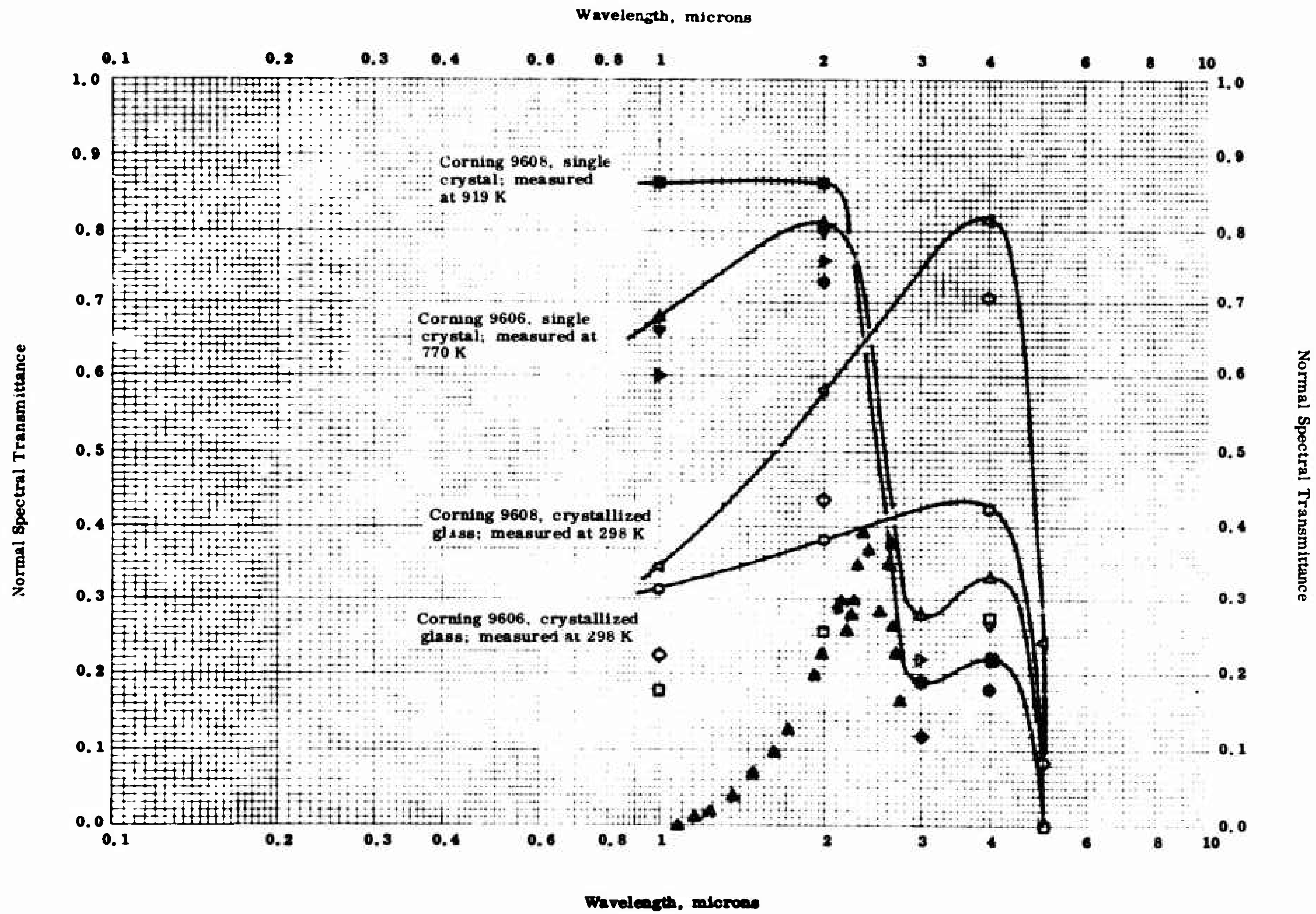


NORMAL SPECTRAL REFLECTANCE -- GLASS CERAMICS
(Pyrocerams)

NORMAL SPECTRAL REFLECTANCE -- GLASS CERAMICS
(Pyrocerams)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	59-15	298	0.3-2.74	4	Pyroceram 9606.	Data taken from smooth curve; 6°-9° incidence, hemispherical viewing; $MgCO_3$ as reference standard.
□	59-15	298	0.3-2.74	4	Pyroceram 9608.	Same as above.

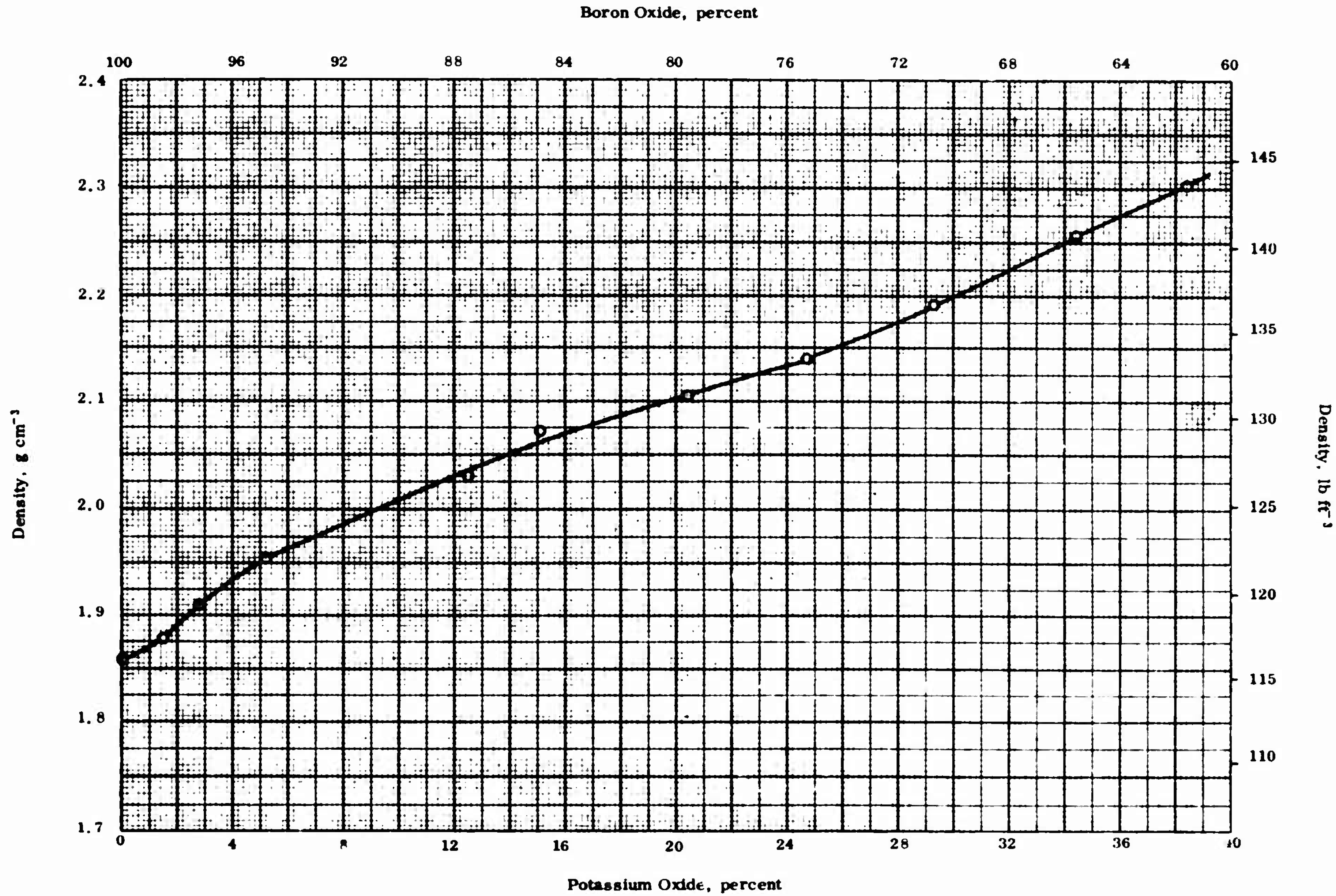


NORMAL SPECTRAL TRANSMITTANCE -- GLASS CERAMICS
(Pyrocerams)

NORMAL SPECTRAL TRANSMITTANCE -- GLASS CERAMICS
(Pyrocerams)

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range μ	Rept. Error %	Sample Specifications	Remarks
○	64-12	298	1-5	± 5	Corning 9606, crystallized glass; 0.005 in. thickness.	
□	64-12	298	1-5	± 5	Same as above; 0.01 in. thickness.	
△	64-12	770	1-5	± 5	Corning 9606, single crystal.	
▽	64-12	900	1-5	± 5	Same as above.	
▷	64-12	1040	1-5	± 5	Same as above.	
◁	64-12	298	1-8	± 5	Corning 9608; cryasallized glass; 0.008 in. thickness.	
◇	64-12	298	1-8	± 5	Same as above; 0.016 in. thickness.	
■	64-12	919	1-5	± 5	Corning 9608; single crystal.	
●	64-12	1070	1-5	± 5	Same as above.	
▲	59-15	298	1.08-2.76		Corning 9608.	Reasonably flat parallel slab; data taken from smooth curve.

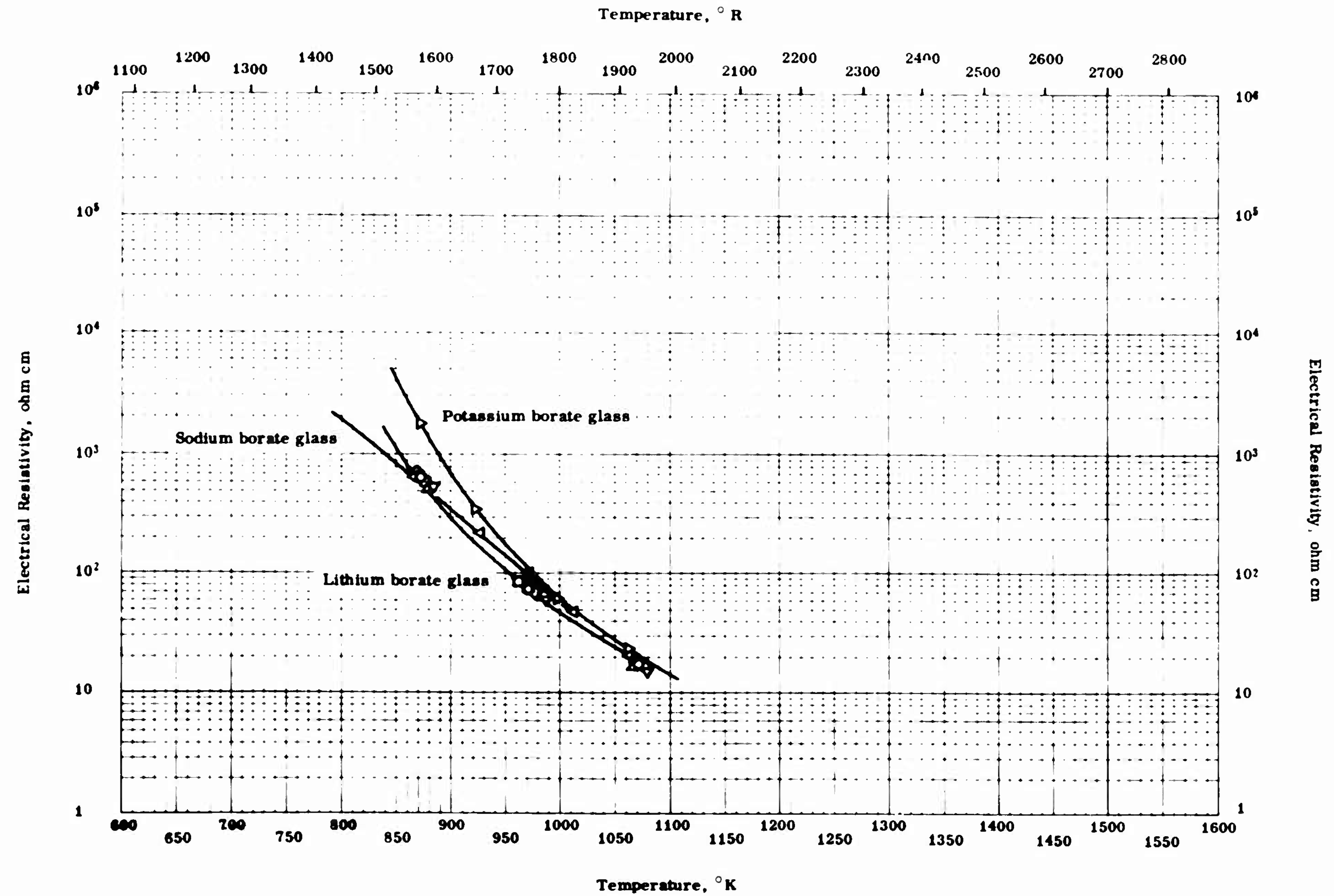


DENSITY -- POTASSIUM BORATE GLASS

DENSITY -- POTASSIUM BORATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	53-29	298		K_2O + B_2O_3 glasses.	By weight in air and in kerosene.

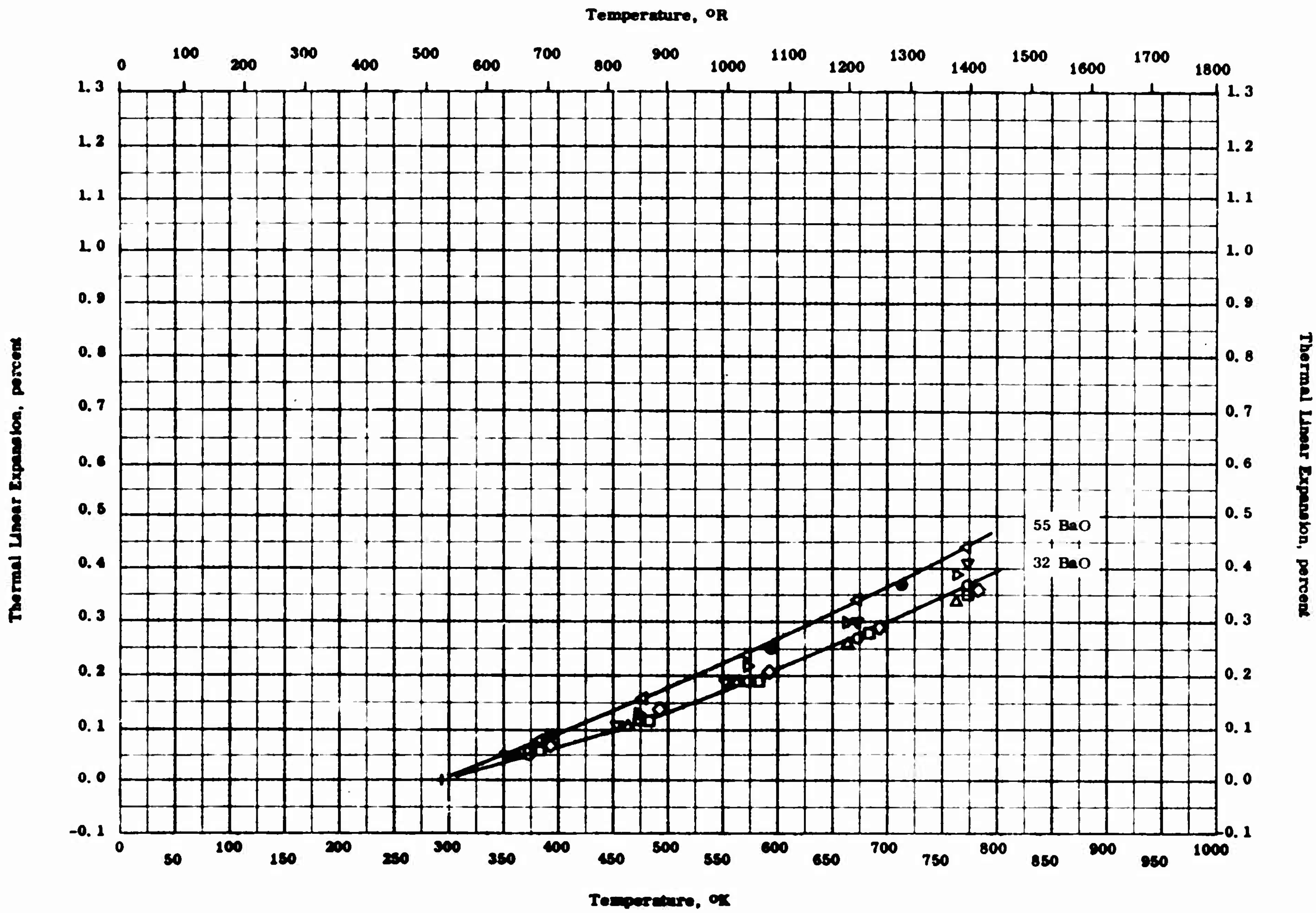


ELECTRICAL RESISTIVITY -- BORATE GLASSES

ELECTRICAL RESISTIVITY -- BORATE GLASSES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-25	873-1073		85.18 B_2O_3, 10.80 Li_2O and 4.02 BeO.	
□	53-25	873-1073		85.18 B_2O_3, 10.80 Li_2O and 4.02 MgO.	
△	53-25	873-1073		85.18 B_2O_3, 10.80 Li_2O and 4.02 CaO.	
◇	53-25	873-1073		85.18 B_2O_3, 10.80 Li_2O and 4.02 BaO.	
▽	53-25	873-1073		85.18 B_2O_3, 10.80 Li_2O and 4.02 SrC.	
◁	53-25	873-1073		85.18 B_2O_3, 10.80 Na_2O and 4.02 BeO.	
▷	53-25	873-1073		85.18 B_2O_3, 10.80 K_2O and 4.02 BeO.	

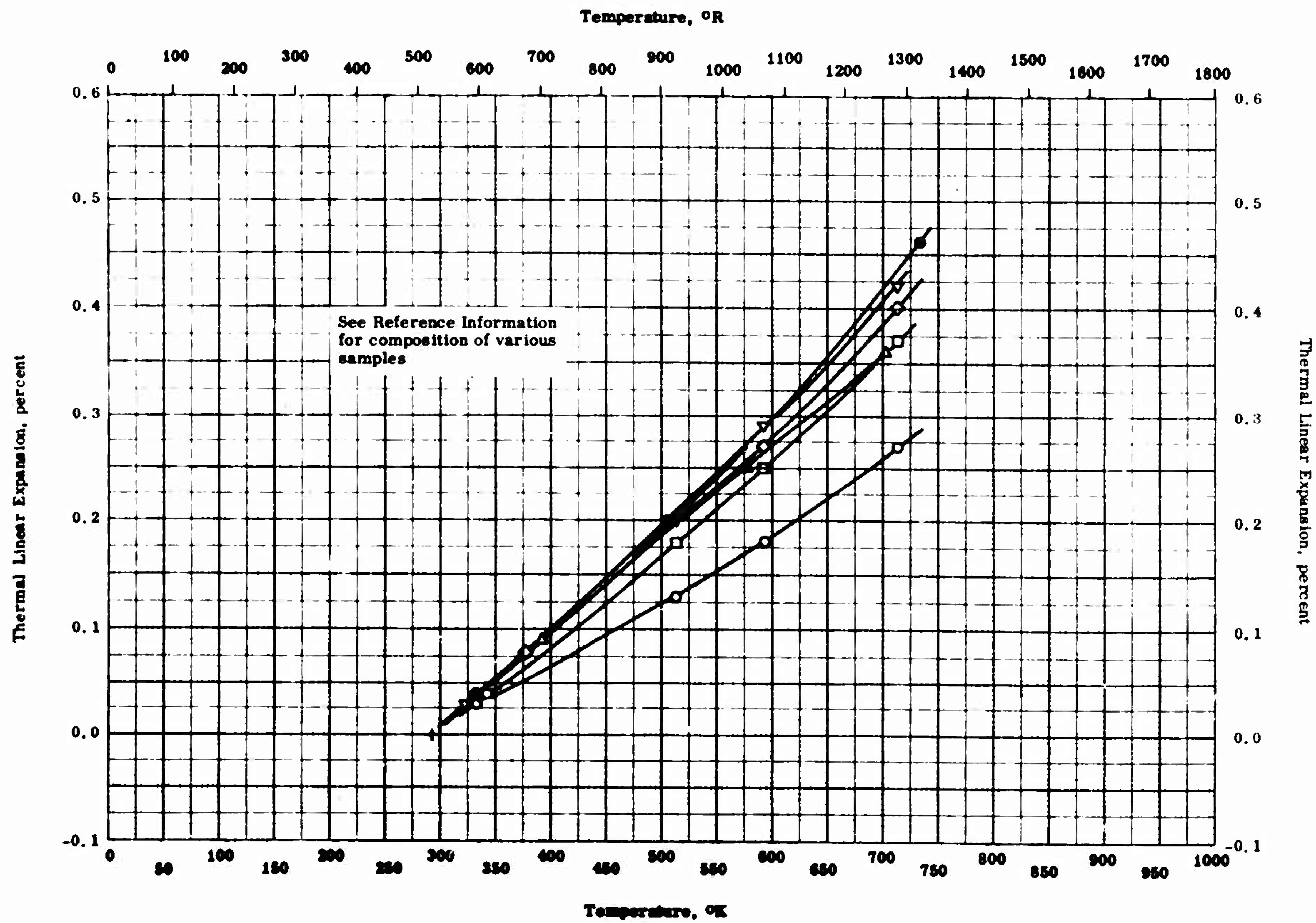


THERMAL LINEAR EXPANSION -- BARIUM BORATE GLASS

THERMAL LINEAR EXPANSION -- BARIUM BORATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-33	293-773		68.4 B_2O_3 and 31.6 BaO.	Melted from reagent grade materials at 1300 C. cast, annealed 3 hrs at 590 C, cooled at 3 C hr^{-1} to 500 C, and furnace-cooled.
□	56-33	293-773		64.2 B_2O_3 and 35.8 BaO.	Same as above.
△	56-33	293-763		59.4 B_2O_3 and 40.6 BaO.	Same as above.
◇	56-33	293-793		54.9 B_2O_3 and 45.1 BaO.	Same as above.
▽	56-33	293-773		52.5 B_2O_3 and 47.5 BaO.	Same as above.
▷	56-33	293-763		50.6 B_2O_3 and 49.4 BaO.	Same as above.
◁	56-33	293-773		44.6 B_2O_3 and 55.4 BaO.	Same as above.
●	52-28	293-713		60 BaO and 40 B_2O_3.	Melted in alumina crucible at 1100 C from chemically pure BaF_2 (from Marita Chemical Co.) and pure B_2O_3 made by dehydrating H_3BO_3 at 200 - 300 C.

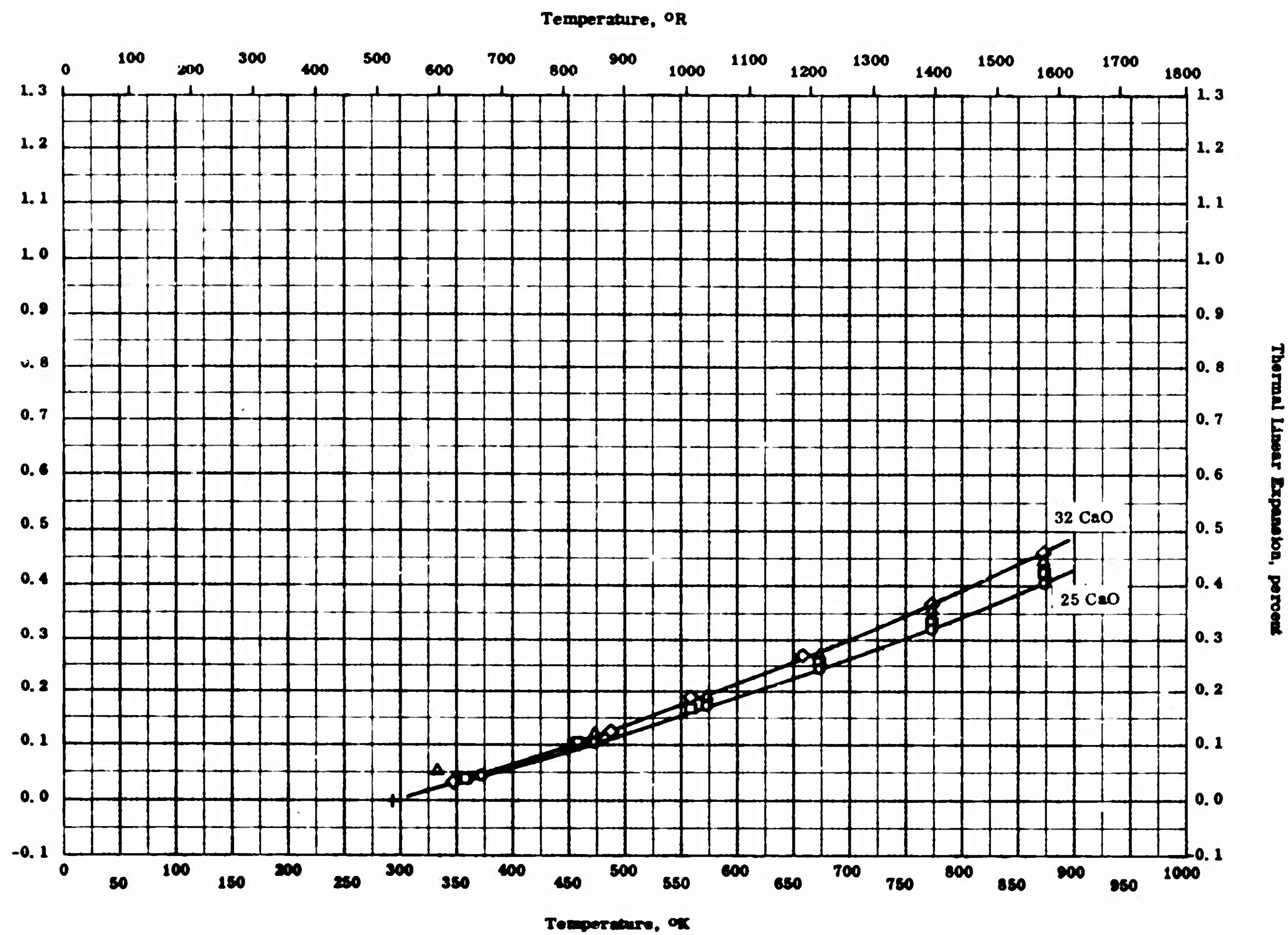


THERMAL LINEAR EXPANSION -- BARIUM FLUOBORATE GLASS

THERMAL LINEAR EXPANSION -- BARIUM FLUOBORATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-28	293-713		60 B_2O_3 and 40 BaF_2; density 176 lb ft^{-3}; B_2O_3 from dehydrating H_3BO_3 at 200-300 C; BaF_2 chemically pure.	Melted in alumina crucible at 1100 C.
□	52-28	293-713		50 B_2O_3 and 50 BaF_2; density 190 lb ft^{-3}; same as above.	Same as above.
△	52-28	293-703		60 BaO and 40 B_2O_3; density 235 lb ft^{-3}; same as above.	Same as above.
◇	52-28	293-713		40 B_2O_3 and 40 BaF_2 and 20 BaO; density 217 lb ft^{-3}; same as above.	Same as above.
▽	52-28	293-713		60 BaF_2 and 40 B_2O_3; density 208 lb ft^{-3}; same as above.	Same as above.
●	52-28	293-733		70 BaF_2 and 30 B_2O_3; density 227 lb ft^{-3}; same as above.	Same as above.

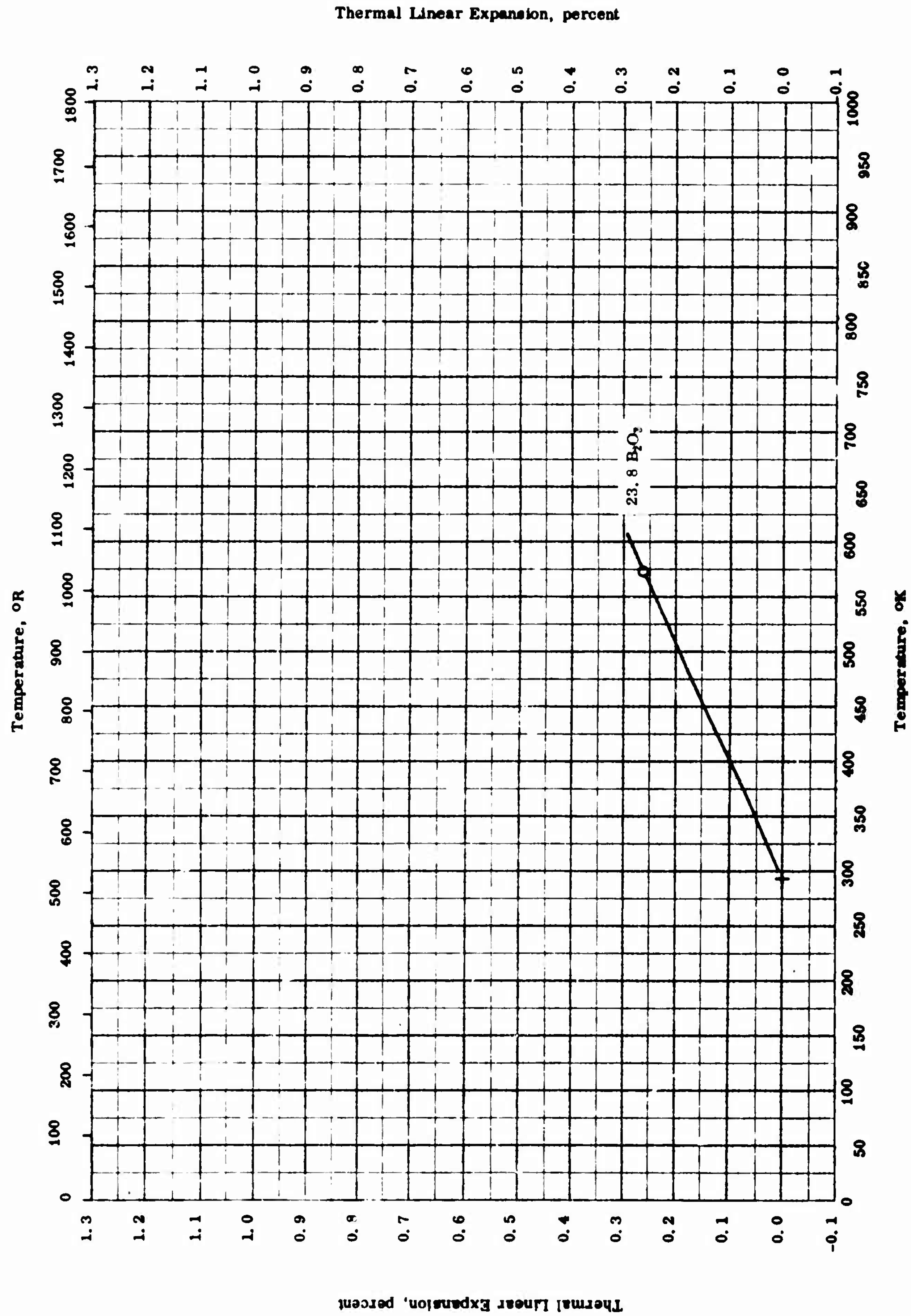


THERMAL LINEAR EXPANSION -- CALCIUM BORATE GLASS

THERMAL LINEAR EXPANSION -- CALCIUM BORATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-33	293-873		75 B_2O_3 and 25 CaO.	Melted from reagent grade materials at 1300 C, cast, annealed 3 hrs at 590 C, cooled at 3 C hr^{-1} to 500 C, and furnace-cooled.
□	56-33	293-8[illegible]		73 B_2O_3 and 27 CaO.	Same as above.
△	56-33	293-873		69.8 B_2O_3 and 30.2 CaO.	Same as above.
◇	56-33	293-873		67.7 B_2O_3 and 32.3 CaO.	Same as above.



THERMAL LINEAR EXPANSION -- LEAD BORATE GLASS

THERMAL LINEAR EXPANSION -- LEAD BORATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	55-39	293-573		$PbO \cdot B_2O_3$; 76.2 PbO and 23.8 B_2O_3.	

THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM BORATE GLASS

Symbol	Material Composition						Average coefficient of linear expansion x 10^6	
	B_2O_3		Al_2O_3		Li_2O			
	Wt. %	Mole%	Wt. %	Mole%	Wt. %	Mole%	323-423 K	582-762 R
o	93.0	85			7.0	15	7.18	3.99
	85.3	80	7.8	5	6.9	15	6.67	3.70
	80.9	80	14.8	10	4.3	10	7.06	3.92
	78.1	75	15.2	10	6.7	15	6.89	3.83
	76.3	65	8.6	5	15.1	30	7.99	4.44
	75.1	70	15.7	10	9.2	20	7.22	4.01
	74.6	72.5	18.8	12.5	6.6	15	6.57	3.65
	73.6	67.5	15.9	10	10.5	22.5	7.50	4.17
	71.9	65	16.2	10	11.9	25	7.75	4.31
	71.2	70	22.3	15	6.5	15	6.73	3.74
	70.3	62.5	16.4	10	13.3	27.5	7.71	4.28
	68.6	60	16.7	10	14.7	30	8.04	4.47
	67.1	67	26.4	18	6.5	15	6.90	3.83
	66.8	57.5	17.0	10	16.2	32.5	8.58	4.77
	65	55	17.3	10	17.7	35	8.82	4.90
	61.2	55	24.5	15	14.3	30	8.24	4.58
	61.1	50	17.9	10	21.0	40	9.92	5.51
	54.2	50	31.8	20	14.0	30	8.21	4.56

THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM BORATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	56-34	323-423		Li_2O - Al_2O_3 - B_2O_3 glasses.	Annealed.

THERMAL LINEAR EXPANSION -- LITHIUM BERYLLIUM BORATE GLASS

	Material Composition						Average coefficient of linear expansion x 10^6	
	B_2O_3		Li_2O		BeO			
Symbol	Wt. %	Mole%	Wt. %	Mole%	Wt. %	Mole%	323-423 K	582-762 R
O	87.9	75	7.5	15	4.5	10	6.56	3.64
	84.9	70	10.4	20	4.7	10	6.81	3.78
	81.7	65	13.5	25	4.9	10	7.57	4.21
	78.2	60	16.8	30	5.0	10	8.61	4.78
							273-578 K	492-1032 R
□	70.23		17.82		11.95		9.9	5.5

THERMAL LINEAR EXPANSION -- LITHIUM BERYLLIUM BORATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-34	323-423		Li_2O - BeO - B_2O_3 glasses.	Annealed.
□	51-31	273-573		Lindemann x-ray transmitting glass; 70.23 B_2O_3, 17.82 Li_2O, and 11.95 BeO.	

THERMAL LINEAR EXPANSION -- LITHIUM MAGNESIUM BORATE GLASS

Symbol	B_2O_3 Wt. %	B_2O_3 Mole%	Li_2O Wt. %	Li_2O Mole%	MgO Wt. %	MgO Mole%	Average coefficient of linear expansion x 10^6 323-423 K	582-762 R
o	95.4	90	4.6	10			9.32	5.18
	92.2	85	4.7	10	3.1	5	7.28	4.04
	90.5	82.5	4.7	10	4.8	7.5	6.60	3.67
	90.3	80	9.7	20			7.31	4.06
	88.8	80	4.8	10	6.4	10	6.35	3.53
	86.7	75	9.9	20	3.4	5	6.88	3.82
	86.0	75	7.4	15	6.6	10	6.72	3.73
	85.2	75	4.9	10	9.9	15	6.30	3.50
	83.0	70	10.2	20	6.9	10	6.78	3.76
	81.5	70	5.0	10	13.5	20	6.12	3.40
	81.4	67.5	11.6	22.5	7.0	10	7.05	3.97
	79.0	65	10.4	20	10.6	15	7.00	3.89
	74.9	60	10.7	20	14.4	20	7.08	3.93
	70.5	55	11.0	20	18.5	25	7.31	4.06

THERMAL LINEAR EXPANSION -- LITHIUM MAGNESIUM BORATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	56-34	323-423		Li_2O - MgO - B_2O_3 Series.	Annealed.

THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINUM BORATE GLASS

Symbol	Material Composition						Average coefficient of linear expansion x 10^6	
	B_2O_3		MgO		Al_2O_3			
	Wt. %	Mole%	Wt. %	Mole%	Wt. %	Mole%	323-423 K	582-762 R
o	61.2	55	22.5	35	16.3	10	5.11	2.84
	60.0	50	31.2	45	8.8	5	5.50	3.06
	59.1	52.5	24.4	37.5	16.5	10	5.08	2.82
	56.9	50	26.4	40	16.7	10	5.02	2.79
	54.5	47.5	28.5	42.5	17.0	10	5.00	2.78
	52.5	45	30.4	45	17.1	10	4.85	2.69

THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINUM BORATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	56-34	323-423		$MgO - Al_2O_3 - B_2O_3$ Series.	Annealed.

THERMAL LINEAR EXPANSION -- MAGNESIUM BERYLLIUM BORATE GLASS

Symbol	Material Composition						Average coefficient of linear expansion x 10^6	
	B_2O_3		MgO		BeO			
	Wt. %	Mole %	Wt. %	Mole%	Wt. %	Mole%	323-423 K	582-762 R
O	61.6	45	27.8	35	10.6	20	5.26	2.92
	60.8	45	31.3	40	7.9	15	4.56	2.53
	57.2	40	29.0	35	13.9	25	5.57	3.09
	56.4	40	32.7	40	10.9	20	5.50	3.06

THERMAL LINEAR EXPANSION -- MAGNESIUM BERYLLIUM BORATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
o	56-34	323-423		MgO - BeO - B_2O_3 series.	Annealed.

THERMAL LINEAR EXPANSION -- SODIUM ALUMINUM BORATE GLASS

Symbol	Material Composition, Mole %			Average coefficient of linear expansion x 10^6	
	B_2O_3	Na_2O	Al_2O_3	323-423 K	562-762 R
○	80	20		9.59	5.33
	75	20	5	9.92	5.51
	75	15	10	9.34	5.19
	70	30		10.78	5.99
	70	20	10	10.18	5.66
	67.5	22.5	10	10.60	5.89
	65	30	5	11.30	6.28
	65	25	10	11.46	6.37
	65	20	15	10.79	5.99
	60	30	10	11.92	6.62
	55	30	15	11.97	6.65
	50	30	20	12.12	6.73
	40	40	20	14.44	8.02
□	65	35		10.4	5.8
	65	32.5	2.5	0.4	5.2
	65	30	5	9.0	5.0
	65	27.5	7.5	8.8	4.[illegible]
	65	25	10	7.9	4.4
	65	22.5	12.5	6.9	3.8
	65	20	15	7.2	4.0

THERMAL LINEAR EXPANSION -- SODIUM ALUMINUM BORATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-34	323-423		$Na_2O - Al_2O_3 - B_2O_3$ glasses.	Annealed.
□	51-32	323-423		$Na_2O - Al_2O_3 - B_2O_3$ glasses.	

THERMAL LINEAR EXPANSION -- SODIUM BERYLLIUM BORATE GLASS

Symbol	B_2O_3 Wt. %	B_2O_3 Mole%	Na_2O Wt. %	Na_2O Mole%	BeO Wt. %	BeO Mole%	Average coefficient of linear expansion x 10^6 323-423 K	Average coefficient of linear expansion x 10^6 582-762 R
○	88. 7	85	9. 3	10	2. 0	5	9. 56	5. 31
	81. 3	75	14. 5	15	4. 2	10	9. 80	5. 44
	76. 4	70	19. 4	20	4. 2	10	9. 51	5. 28
	71. 3	65	24. 4	25	4. 3	10	9. 89	5. 49
	66. 2	60	29. 5	30	4. 3	10	11. 79	6. 55
	61. 1	55	34. 6	35	4. 3	10	11. 37	6. 32

THERMAL LINEAR EXPANSION -- SODIUM BERYLLIUM BORATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	56-34	323-423		Na_2O - BeO - B_2O_3 glasses.	Annealed.

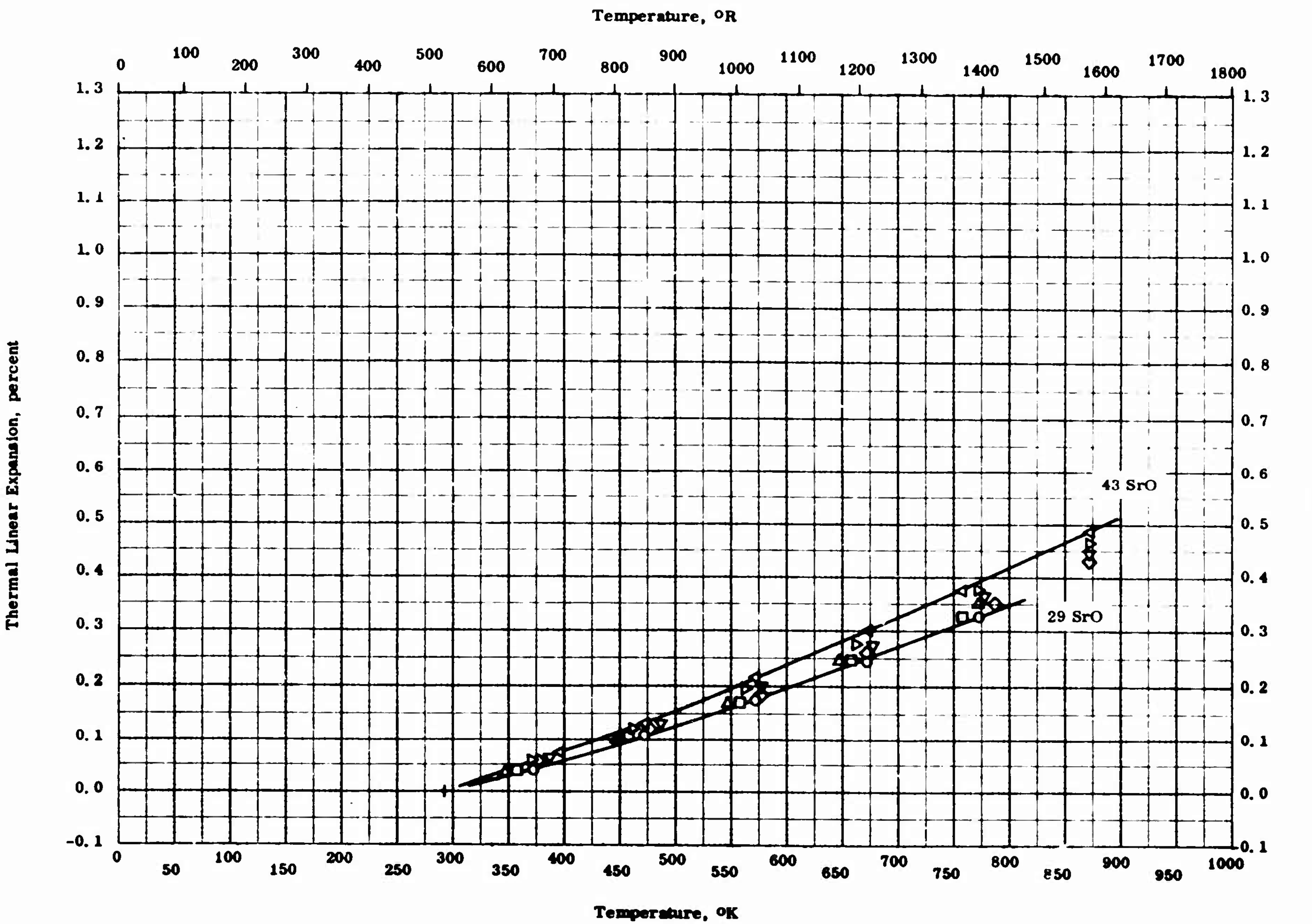
THERMAL LINEAR EXPANSION -- SODIUM MAGNESIUM BORATE GLASS

Symbol	Material Composition						Average coefficient of linear expansion x 10^6	
	B_2O_3		Na_2O		MgO			
	Wt. %	Mole%	Wt. %	Mole%	Wt. %	Mole%	323-423 K	582-762 R
O	91. 0	90	9. 0	10			10. 31	5. 73
	89. 2	85	4. 7	5	6. 1	10	7. 41	4. 12
	87. 8	85	9. 2	10	3. 0	5	9. 10	5. 06
	86. 2	82. 5	9. 3	10	4. 5	7. 5	7. 95	4. 42
	84. 5	80	9. 4	10	6. 1	10	7. 55	4. 19
	81. 0	75	9. 6	10	9. 4	15	7. 45	4. 14
	79. 7	75	14. 2	15	6. 1	10	8. 07	4. 48
	78. 9	75	16. 9	18	4. 2	7	8. 68	4. 82
	78. 4	75	18. 6	20	3. 0	5	9. 25	5. 14
	77. 4	70	9. 8	10	12. 8	20	7. 37	4. 09
	77. 1	75	22. 9	25			10. 08	5. 60
	74. 8	70	19. 0	20	6. 2	10	8. 88	4. 93
	73. 6	65	10. 1	10	16. 4	25	7. 39	4. 11
	71. 0	65	19. 5	20	9. 5	15	9. 17	5. 09
	70. 5	65	21. 7	22. 5	7. 8	12. 5	9. 75	5. 42
	69. 9	65	23. 9	25	6. 2	10	10. 45	5. 81
	64. 9	60	28. 9	30	6. 2	10	12. 05	6. 69
	56. 6	50	30. 3	30	13. 1	20	11. 10	6. 17

THERMAL LINEAR EXPANSION -- SODIUM MAGNESIUM BORATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	56-34	323–423		Na_2O - MgO - B_2O_3 glasses.	Annealed.

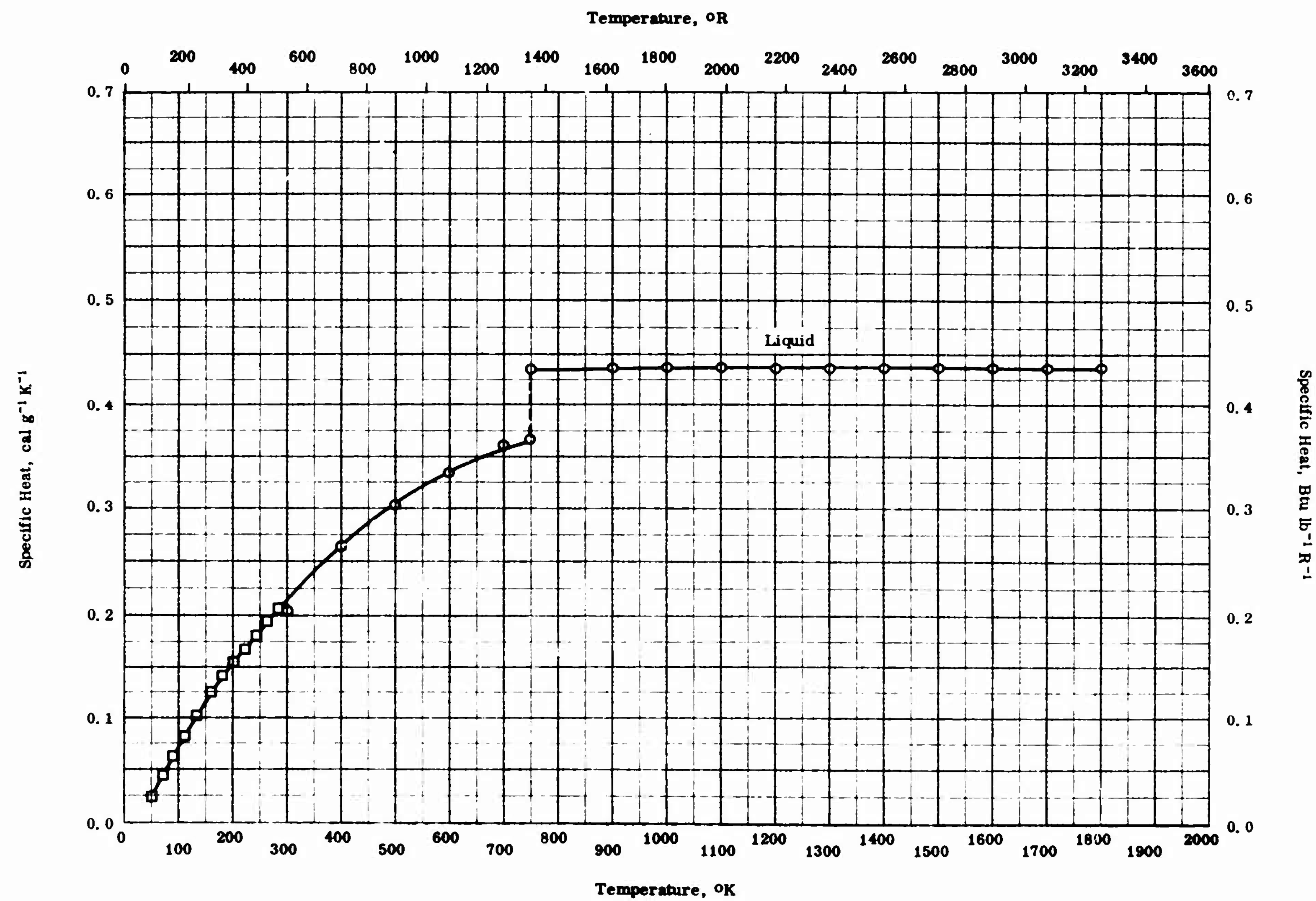


THERMAL LINEAR EXPANSION -- STRONTIUM BORATE GLASS

THERMAL LINEAR EXPANSION -- STRONTIUM BORATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-33	293-773		71 B_2O_3 and 29 SrO.	Melted from reagent grade materials at 1300 C, cast, annealed 3 hrs at 590 C, cooled to 500 C at 3 C hr^{-1}, and furnace-cooled.
□	56-33	293-758		70.6 B_2O_3 and 29.4 SrO.	Same as above.
△	56-33	293-773		65.6 B_2O_3 and 34.4 SrO.	Same as above.
◇	56-33	293-873		64.5 B_2O_3 and 35.5 SrO.	Same as above.
▽	56-33	293-873		62.7 B_2O_3 and 37.3 SrO.	Same as above.
▷	56-33	293-873		60.4 B_2O_3 and 39.6 SrO.	Same as above.
◁	56-33	293-873		57.4 B_2O_3 and 42.6 SrO.	Same as above.



SPECIFIC HEAT -- BORON OXIDE GLASS

SPECIFIC HEAT -- BORON OXIDE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	41-5	298-1800		99.30 - 99.79 B_2O_3 and 0.06 - 0.55 H_2O.	Two samples of boron sesquioxide glass.
□	41-6	53-295	≤0.5	99.7 B_2O_3, 0.3 H_2O, and 0.1 other impurities.	

PROPERTIES OF GERMANIUM OXIDE GLASS

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density	3.67	229

*Average for engineering purposes

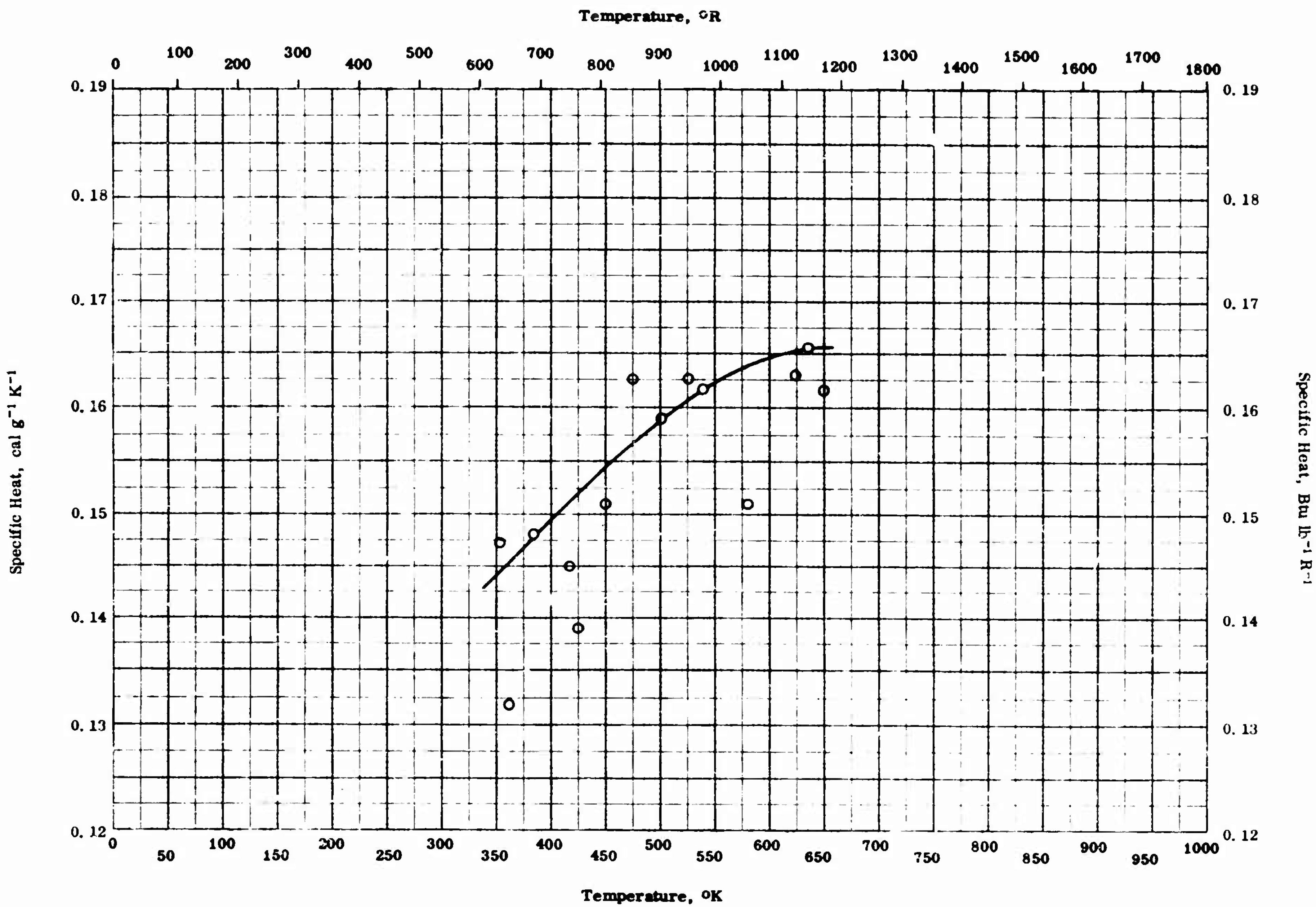
REPORTED VALUES

Density		g cm^{-3}	lb ft^{-3}
	○	3.68	230
	□	3.67	229
	△	3.66	228
	◇	3.65	228
	▽	3.64	227

PROPERTIES OF GERMANIUM OXIDE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-29	298		79.4 GeO_2, 14.1 Na_2O, and 6.5 CaO.	Density by weight and volume by displacement in liquid.
□	55-29	298		79.35 GeO_2, 15.4 Na_2O, and 5.35 CaO.	Same as above.
△	55-29	298		79.3 GeO_2, 16.6 Na_2O, and 4.28 CaO.	Same as above.
◇	55-29	298		79.2 GeO_2, 17.75 Na_2O, and 3.22 CaO.	Same as above.
▽	55-29	298		79.0 GeO_2, 18.9 Na_2O, and 2.15 CaO.	Same as above.

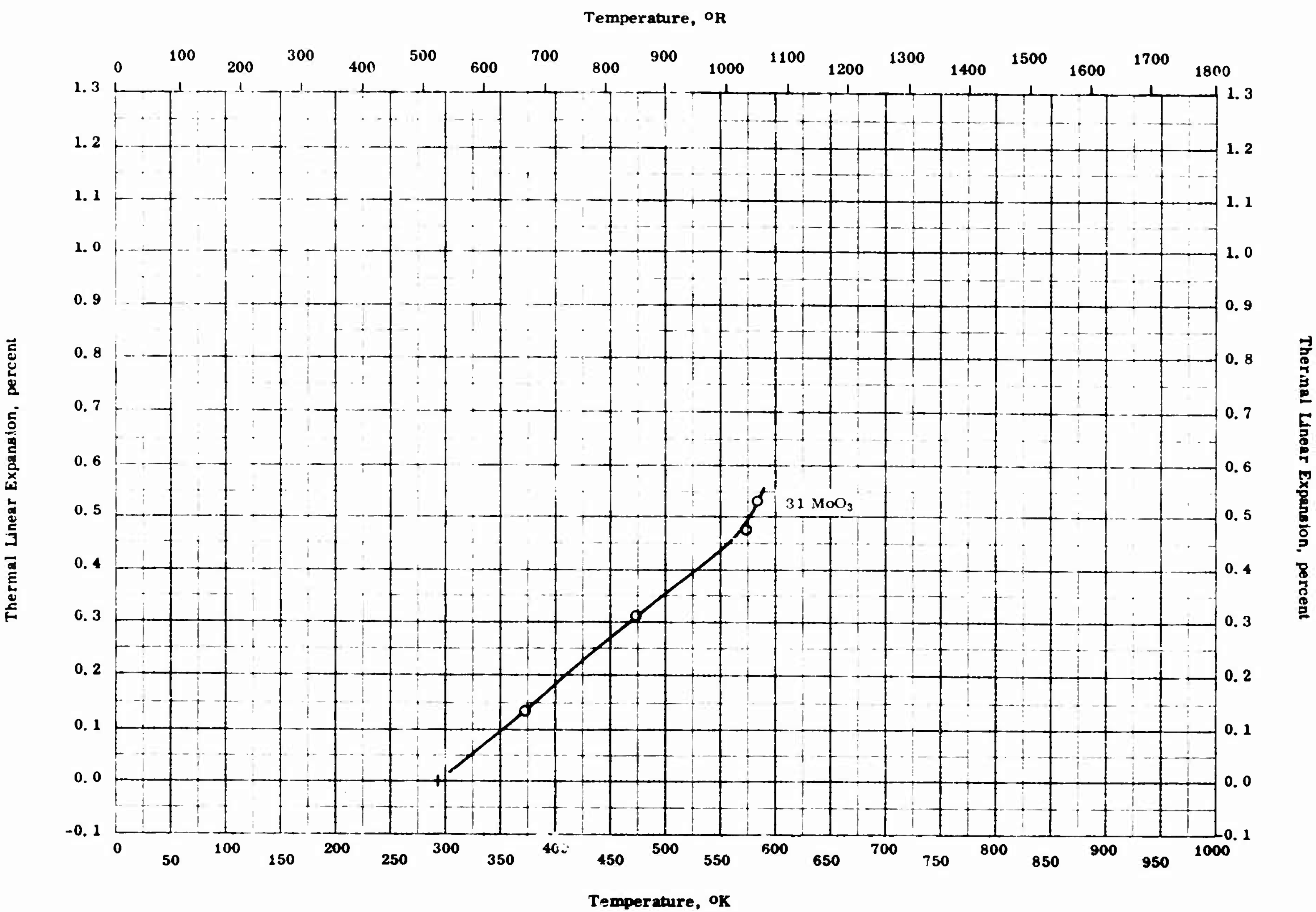


SPECIFIC HEAT -- GERMANIUM OXIDE GLASS

SPECIFIC HEAT — GERMANIUM OXIDE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-16	357-647		Germanium oxide glass; powder between 40 to 60 mesh.	Fused in platinum for 8 hrs at 1000 C and furnace cooled; crushed and screened.

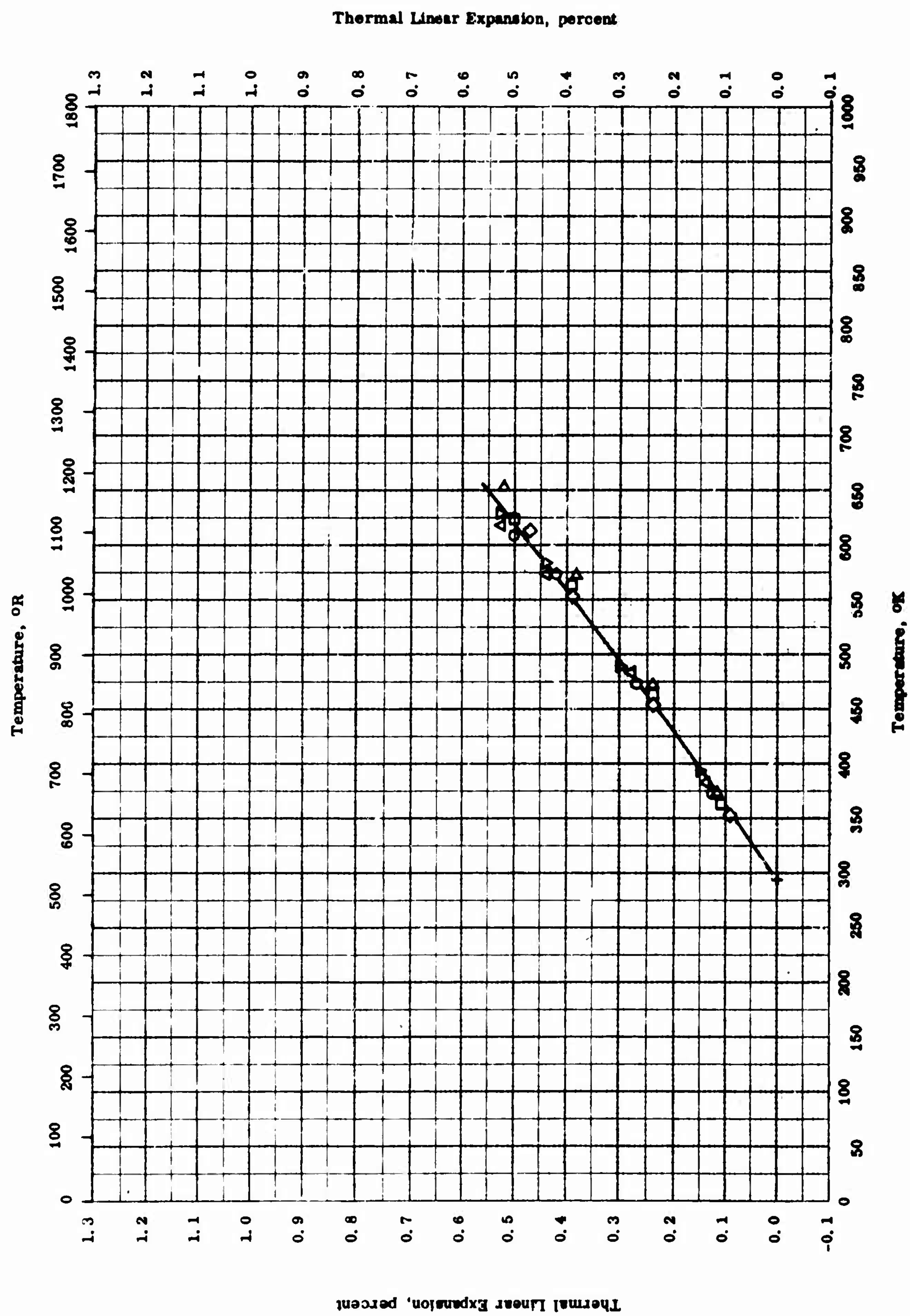


THERMAL LINEAR EXPANSION -- TELLURIUM OXIDE - MOLYBDENUM OXIDE GLASS

THERMAL LINEAR EXPANSION -- TELLURIUM OXIDE - MOLYBDENUM OXIDE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-41	293-583		69 TeO_2 and 31 MoO_3; density 314 lb ft^{-3}.	Melted in Al_2O_3 crucible.

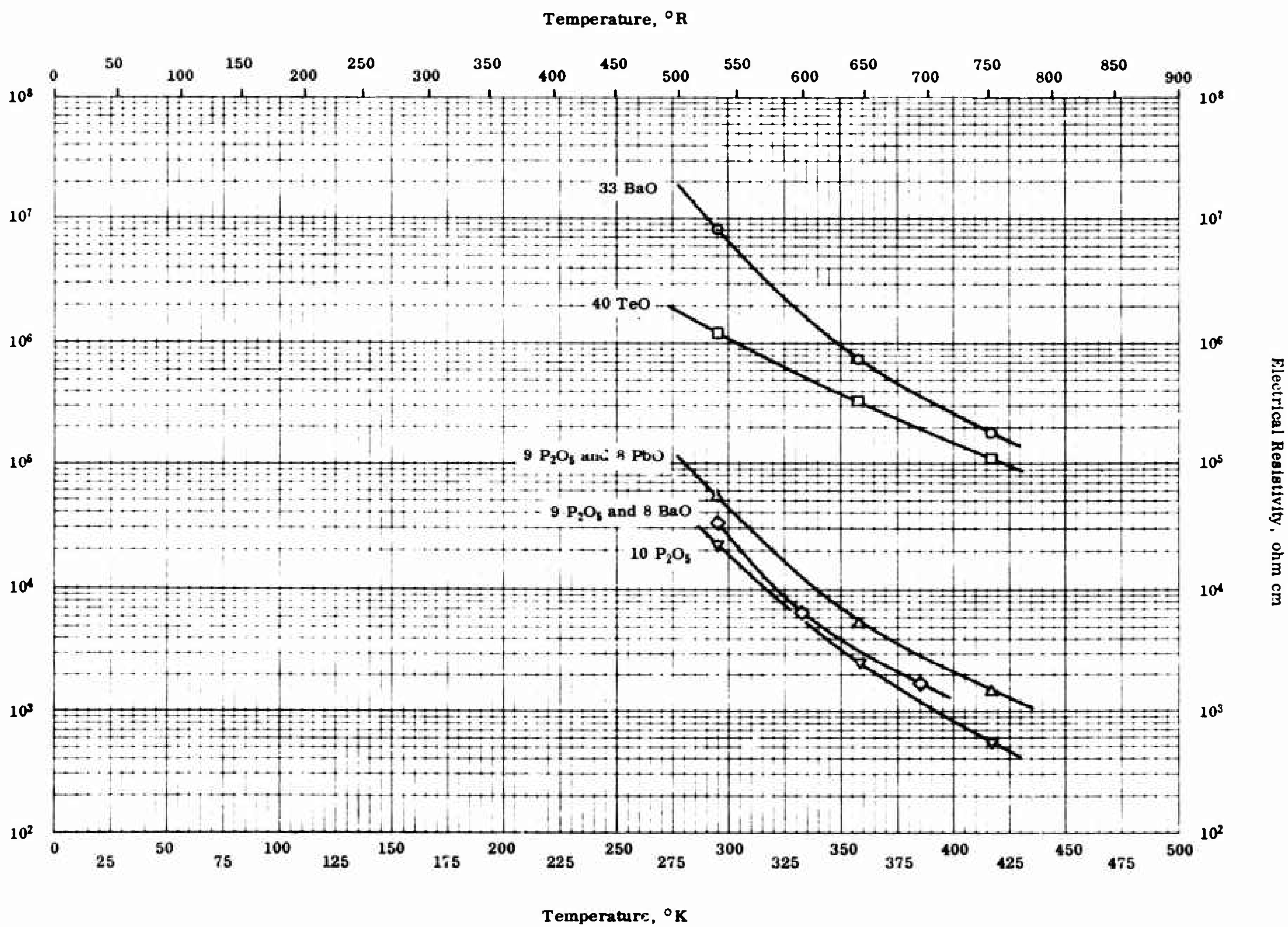


THERMAL LINEAR EXPANSION -- TELLURIUM OXIDE - TUNGSTEN OXIDE GLASS

THERMAL LINEAR EXPANSION -- TELLURIUM OXIDE - TUNGSTEN OXIDE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-41	373-608		83.3 TeO_2 and 16.7 WO_3; density 364 lb ft^{-3}.	Melted in Al_2O_3 crucible.
□	54-41	373-623		82.3 TeO_2 and 17.7 WO_3; density 366 lb ft^{-3}.	Same as above.
△	54-41	373-613		79.1 TeO_2 and 20.9 WO_3; density 368 lb ft^{-3}.	Same as above.
◇	54-41	373-613		77.5 TeO_2 and 22.5 WO_3; density 370 lb ft^{-3}.	Same as above.
▽	54-41	373-623		75.6 TeO_2 and 24.4 WO_3; density 371 lb ft^{-3}.	Same as above.
▷	54-41	373-653		65.5 TeO_2 and 34.5 WO_3; density 379 lb ft^{-3}.	Same as above.

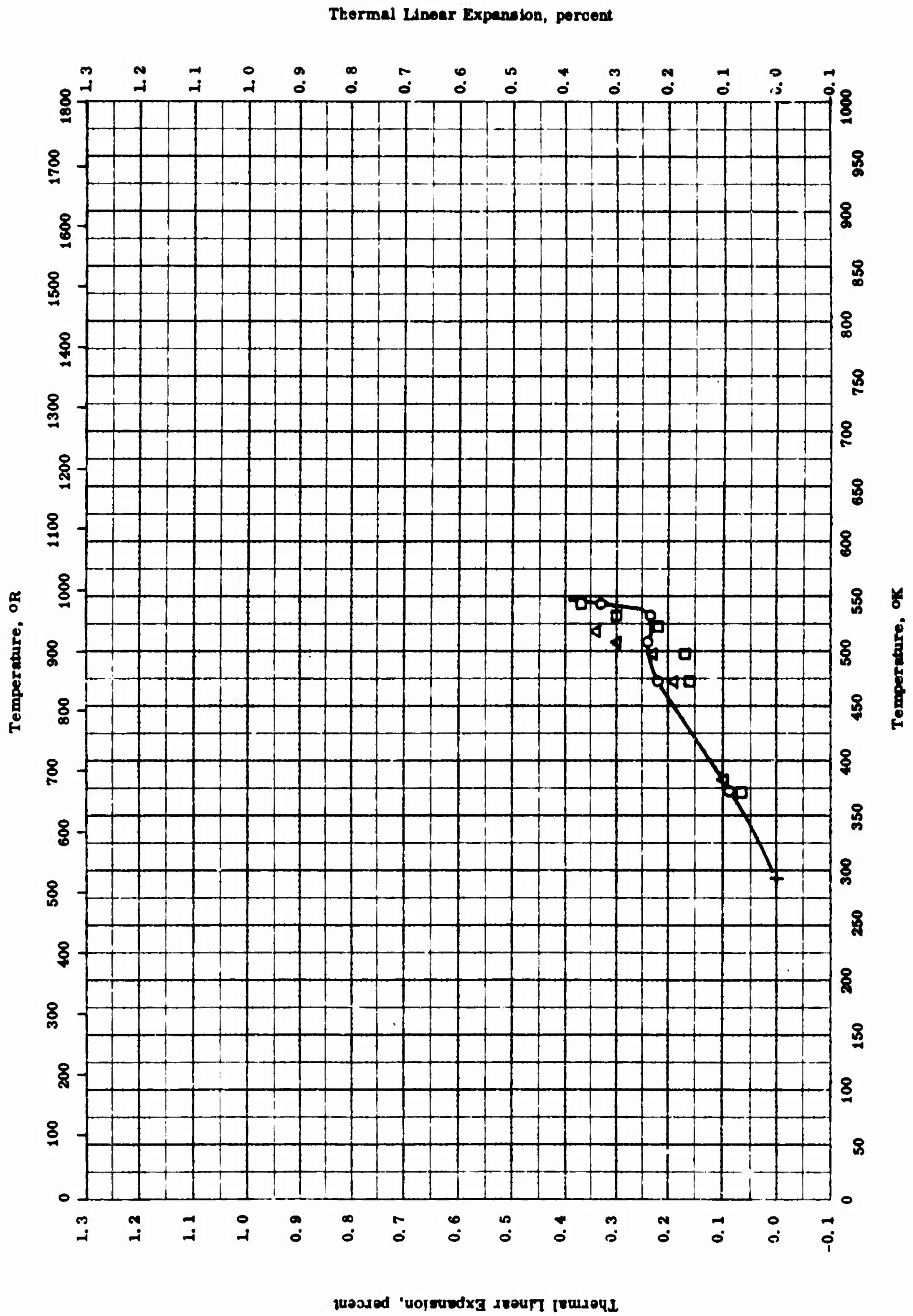


ELECTRICAL RESISTIVITY -- VANADATE GLASS

ELECTRICAL RESISTIVITY -- VANADATE GLASS

REFERFNCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-22	295-417		67 V_2O_5 and 33 BaO.	
□	54-22	295-417		60 V_2O_5 and 40 TeO_2.	
△	54-22	295-417		83 V_2O_5, 9 P_2O_5, and 8 BaO.	
◇	54-22	295-417		83 V_2OT, 9 P_2O_5, and 8 PbO.	
▽	54-22	295-417		90 V_2O_5 and 10 P_2O_5.	

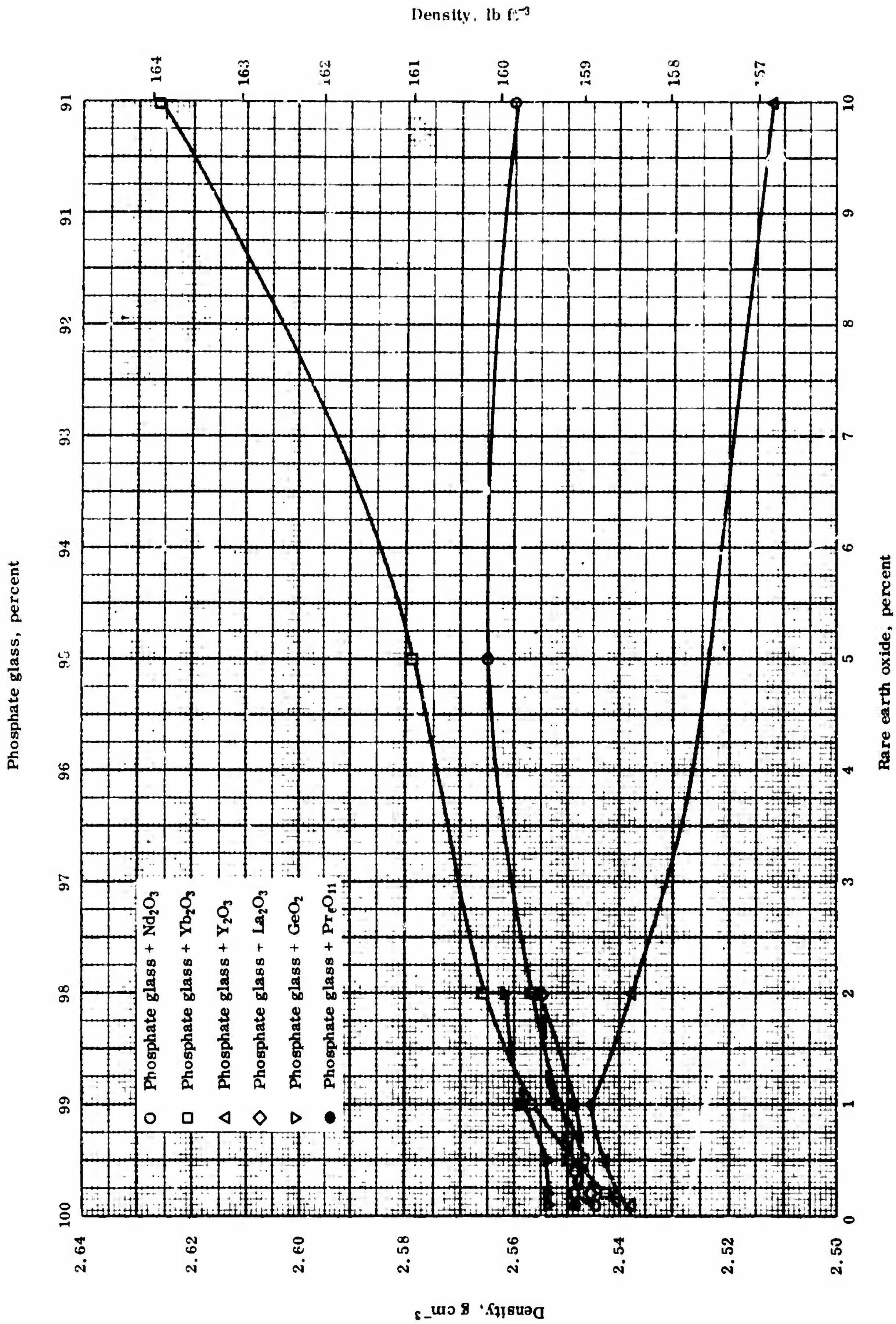


THERMAL LINEAR EXPANSION -- VANADATE GLASS

THERMAL LINEAR EXPANSION -- VANADATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-18	298-543		$SrO + 2\ V_2O_5$; 98 - 99 vol % glass and 1 - 2 vol % V_2O_5 inclusions.	Heated to 700 C.
□	54-22	293-543		67 V_2O_5 and 33 BaO.	
△	54-22	293-518		83 V_2O_5, 9 P_2O_5, and 8 PbO.	



DENSITY -- PHOSPHATE GLASS

DENSITY -- PHOSPHATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-24	295-298		Basic phosphate glass + Nd_2O_3; 77.6 P_2O_5; 8.26 B_2O_3; 5.07 CaO; 3.98 Al_2O_3; 2.52 Fe_2O_3; 0.91 MgO; with various Nd_2O_3.	Measured with CO_2 - free water; temp. meas. to 0.1° C.
□	57-24	295-298		Basic phosphate glass + Yb_2O_3.	Same as above.
△	57-24	295-298		Basic phosphate glass + Y_2O_3.	Same as above.
◇	57-24	295-298		Basic phosphate glass + La_2O_3.	Same as above.
▽	57-24	295-298		Basic phosphate glass + GeO_2.	Same as above.
●	57-24	295-298		Basic phosphate glass + Pr_6O_{11}.	Same as above; auth. also report additional density data for additives of up to 2% of other rare earth oxides.

PROPERTIES OF SILICA GLASS

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density.	2.204	137.6
Softening Point	1770*	3190*

*For Vycor only

REPORTED VALUES

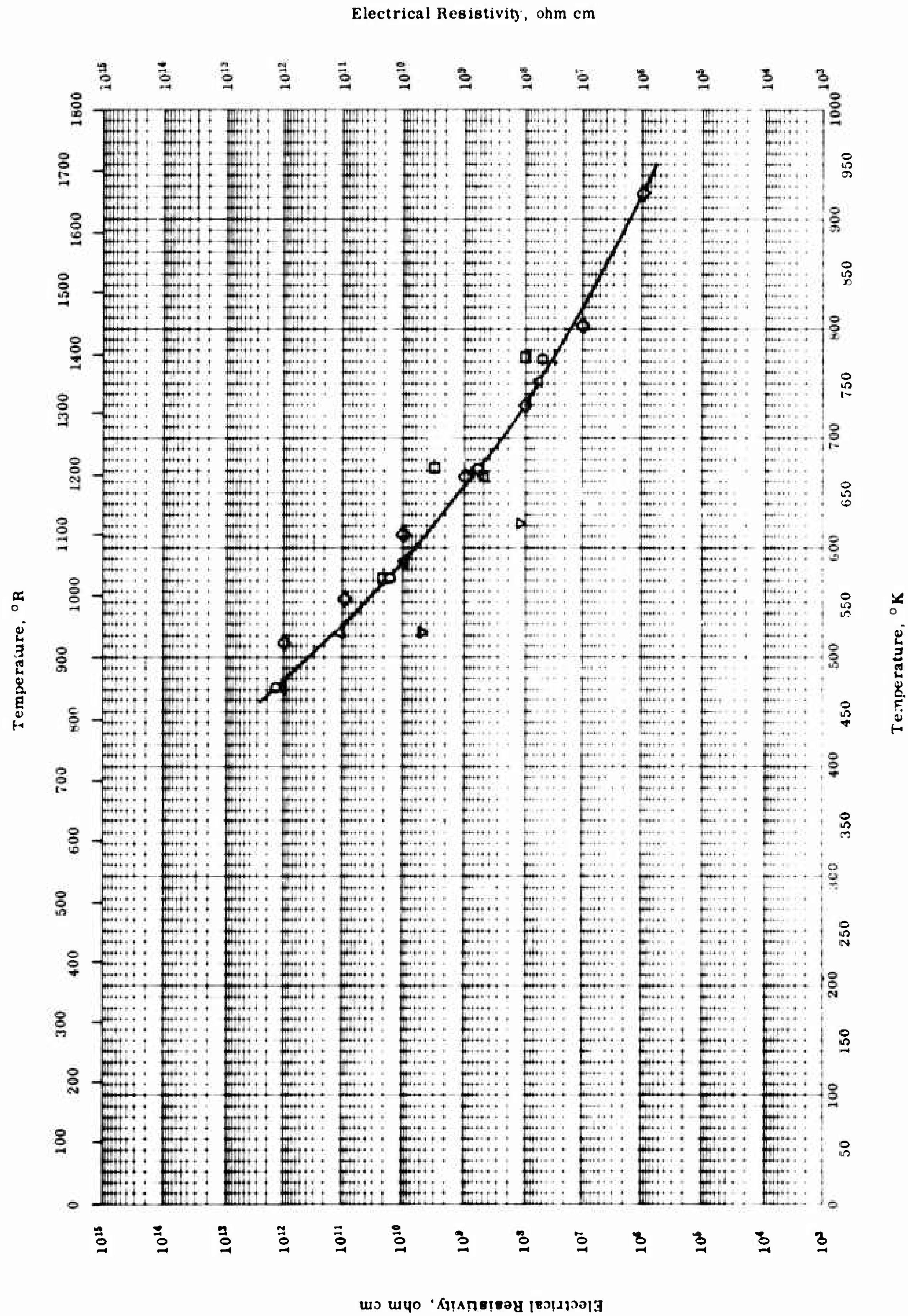
		$g\ cm^{-3}$	$lb\ ft^{-3}$
Density			
	○	2.2040	137.59
	□	2.2030	137.53
	△	2.204 ±0.001	137.6 ±0.06
	◇	2.2030	137.53
	◁	2.1883	136.62

		K	R
Softening Point			
	▽	1773	3192

PROPERTIES OF SILICA GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-14	298		Not given.	Weight and volume be displacement in liquid; author states accuracy $\pm 10^{-4}$ g cm^{-3}.
□	52-2	273-323		Clear fused quartz from Hanovia Chem. Co.	Weight and volume by water displacement.
△	57-13	298		Silica glass.	Weight in air and in Kerosene.
◇	51-17	298		Clear fused silica from Hanovia Chem. Co.	Weight in air and in water.
▽	44-4	1773		Silica glass, Vycor No. 790; 96 SiO_2, 3 B_2O_3, 0.4 R_2O_3 + RO_2 (chiefly Al_2O_3, traces of Na_2O and As_2O_3).	Melted, formed, heat treated above annealing point separating it into two phases; the unstable glass was leached out in hot dilute acid; then the sample was washed and dried.
◁	51-17 also 52-2	293		Vycor, made by Corning Glass Works.	

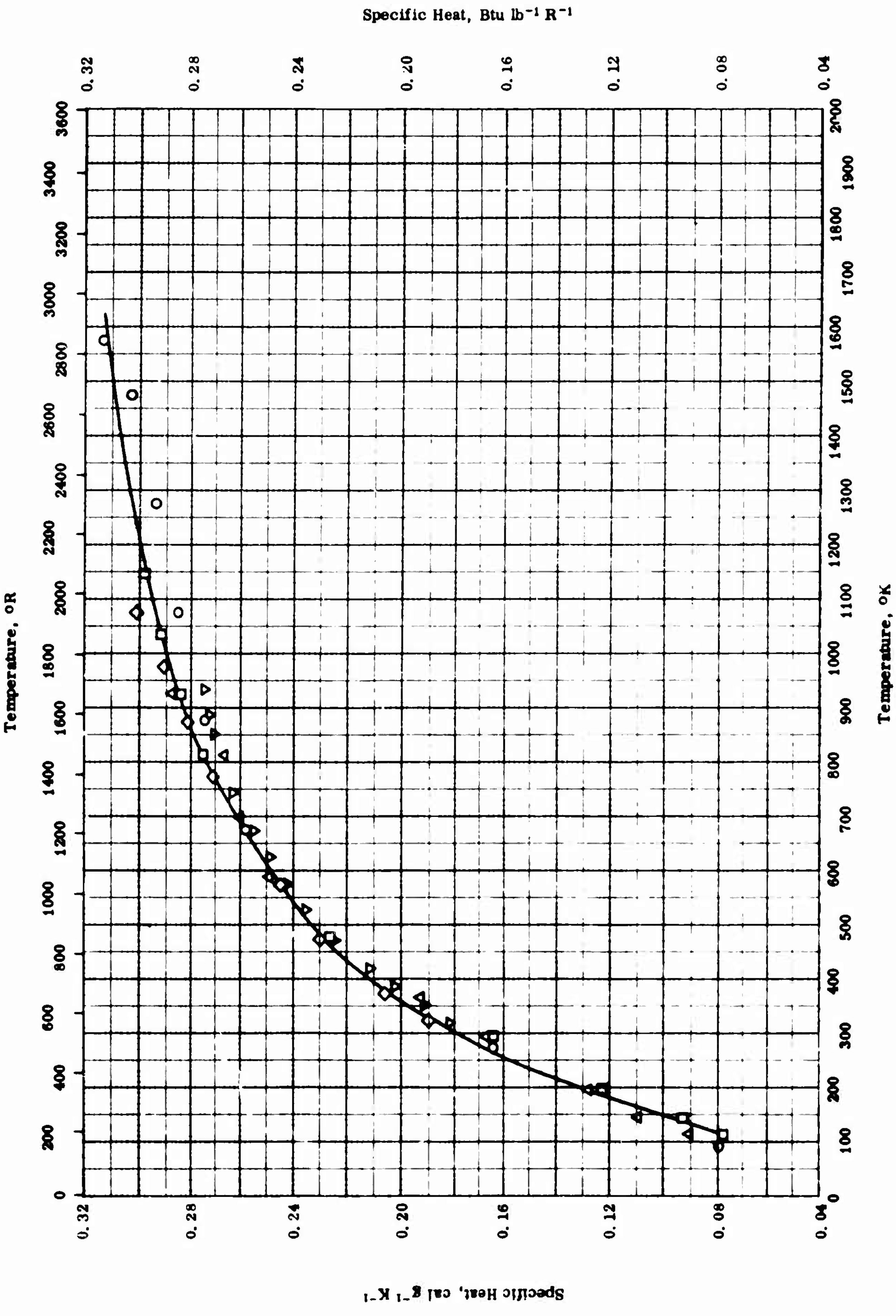


ELECTRICAL RESISTIVITY -- SILICA GLASS

ELECTRICAL RESISTIVITY -- SILICA GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-18	473-773		Fused quartz.	
□	56-14	573-773		Fused silica.	
△	56-12	476-752		Silica glass; 0.001-0.01 ea. Al, Na, 0.0001-0.01 Fe, 0.001 Mg, 0.0001-0.001 Ca, and 0.0001 Cu.	Prepared from reagent grade chemicals, ground, melted, cast, annealed overnight, ground flat.
◇	44-3	513-923		Transparent fused quartz.	
▽	44-4	523-623		Vycor No. 790 silica glass; 96 SiO_2, 3 B_2O_3, 0.4 R_2O_3 + RO_2 (chiefly Al_2O_3), and traces of Na_2O and As_2O_3.	Melted, formed, heat treated above the annealing point, separating into two phases; the unstable glass is leached out in hot dilute acid, washed and dried; author reports same values for porous and multiform types.

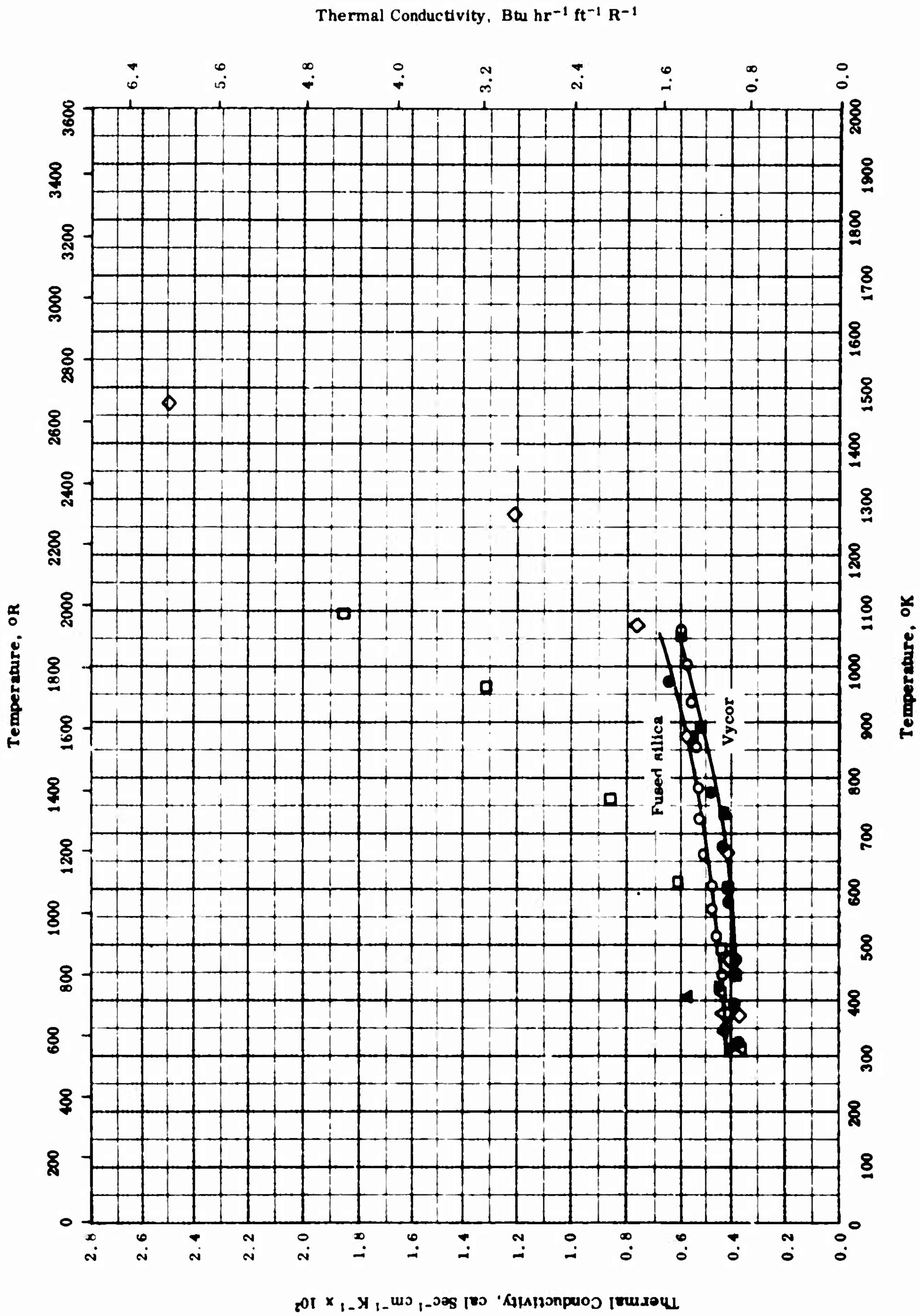


SPECIFIC HEAT -- SILICA GLASS

SPECIFIC HEAT -- SILICA GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-8	93-1573		Fused silica glass No. 7940 from Corning, pure amorphous silica glass; density 137 lb ft^{-3}.	
□	60-1	116-1145	± 3	Fused silica glass from Hanova Chemical Co.; density 137.6 lb ft^{-3} at 32 F.	
▽	36-1	323-936		Quartz glass.	
◇	58-8	323-1073		Vycor glass 7900 from Corning.	
△	60-1	116-922		Vycor glass from Corning.	Under helium atmosphere.

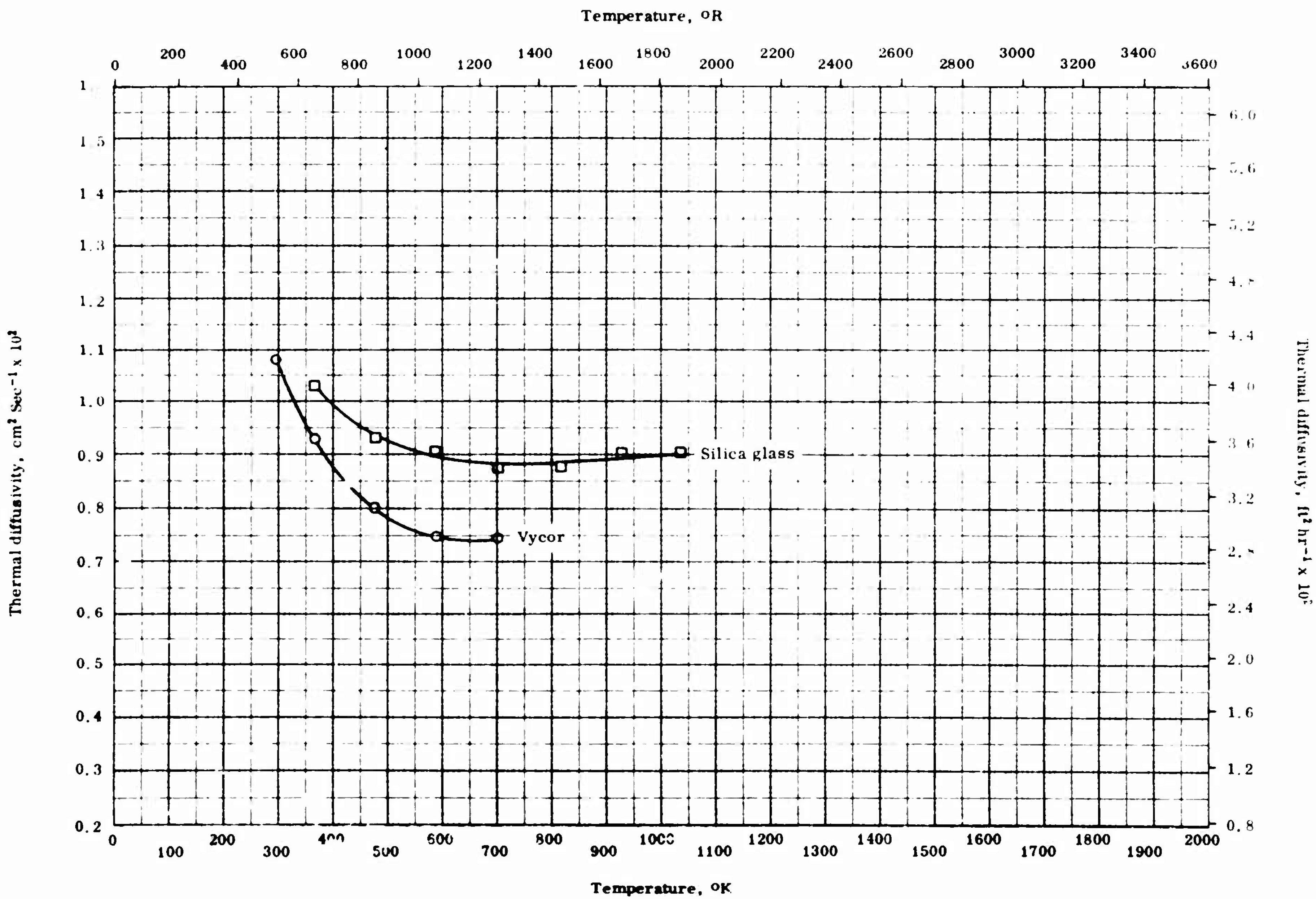


THERMAL CONDUCTIVITY -- SILICA GLASS

THERMAL CONDUCTIVITY -- SILICA GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-4	446-1066		Fused quartz.	Low emissivity foil on both sides of sample.
□	43-1	378-1095		Fused silica glass.	
△	53-1	311-412		Vitreous silica (silky fused silica)	Two samples; one with silky lines parallel to heat flow and the other perpendicular.
◇	55-6	373-1473		Clear fused silica.	
●	55-7	323-973		Fused silica (transparent).	Ground from blocks of clear fused silica.
▲	52-1	346-408		Fused quartz.	
▼	52-1	311-408		Vitreous silica	2 clear samples; 1 smoky.
■	54-4	442-1060		Vycor glass.	

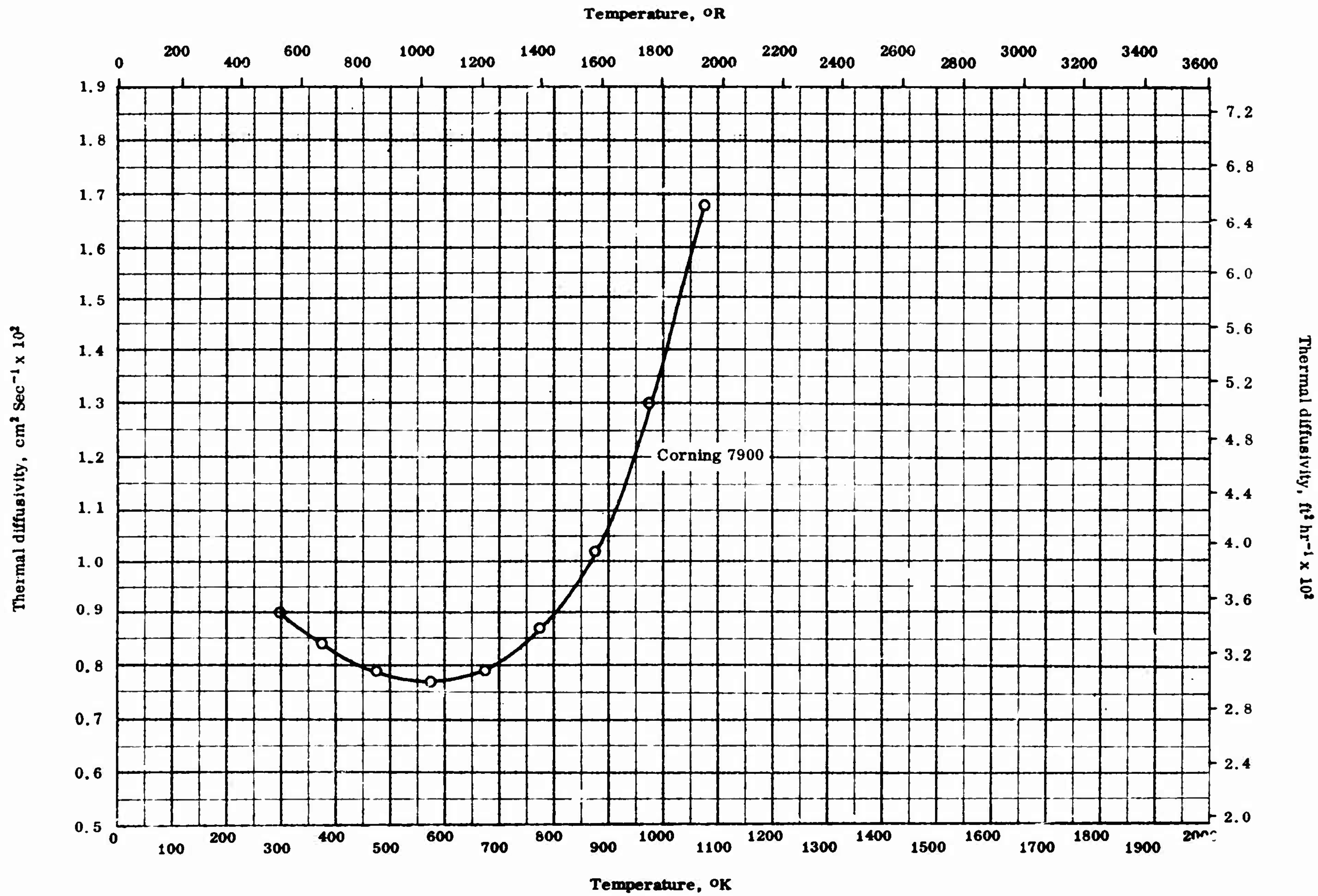


THERMAL DIFFUSIVITY -- SILICA GLASS

THERMAL DIFFUSIVITY -- SILICA GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	60-1	367-1033		Silica glass from Hanovia Chemical Co.	
○	60-1	293-700		Vycor from Corning Glass Works.	

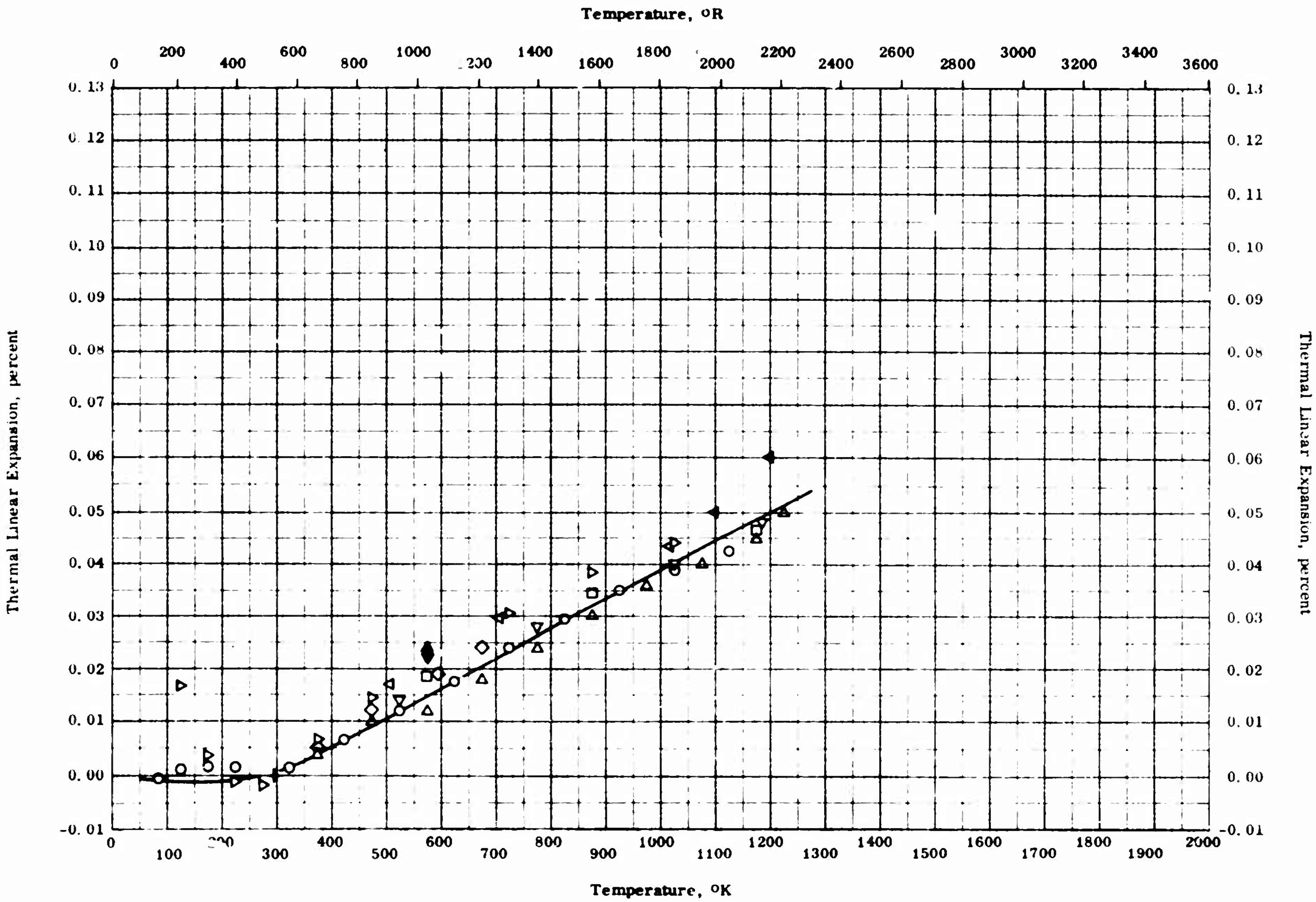


THERMAL DIFFUSIVITY -- 96% SILICA GLASS
(Corning 7900)

THERMAL DIFFUSIVITY -- 96% SILICA GLASS
(Corning 7900)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	62-1	298-1073	15	Corning Glass 7900; 96.0 SiO_2 and 3.0 B_2O_3.	Radiation contribution included in last five data points.

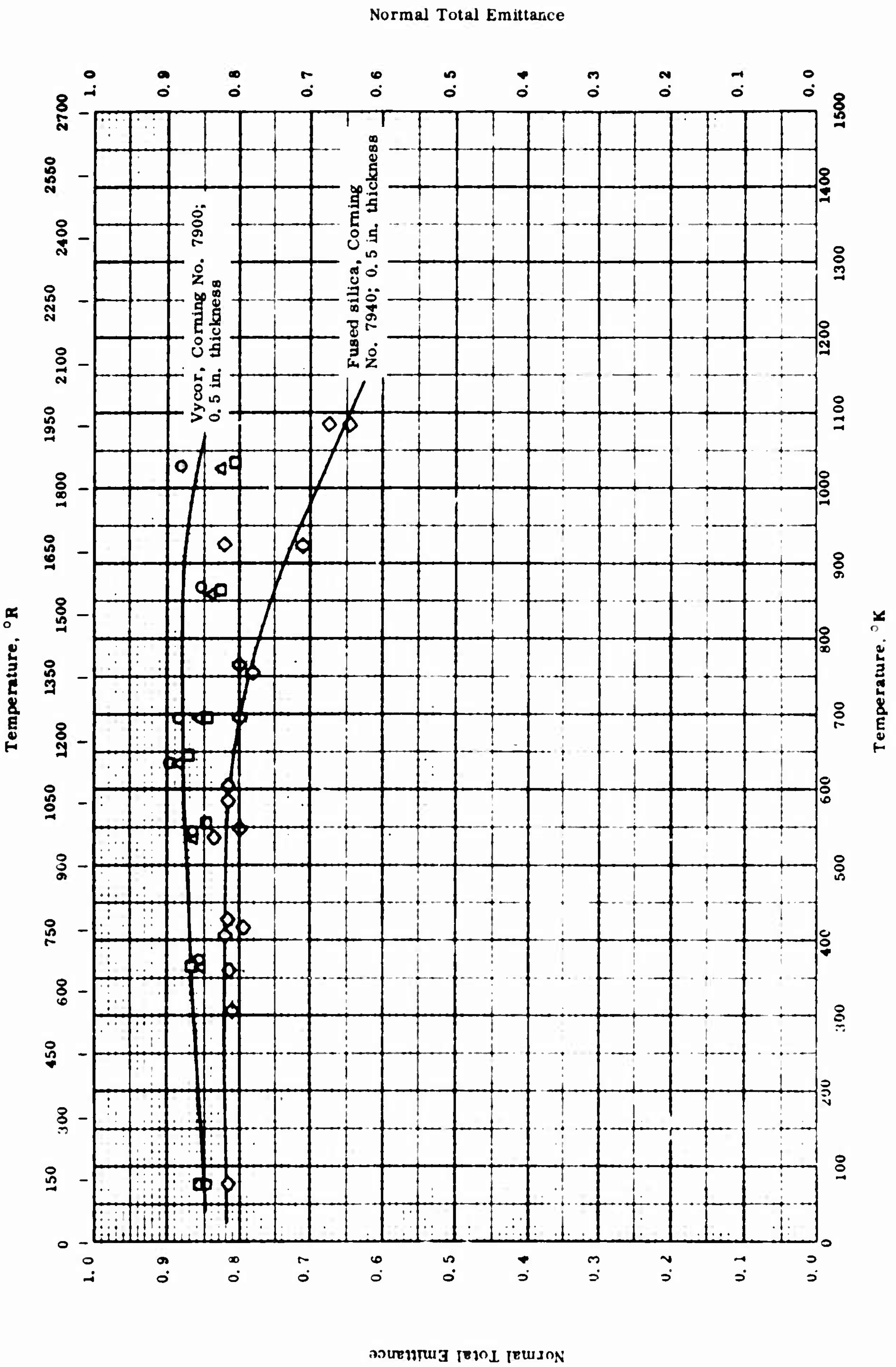


THERMAL LINEAR EXPANSION -- SILICA GLASS

THERMAL LINEAR EXPANSION -- SILICA GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-2	83-1123		Clear fused silica from Hanovia Chemical Co.; density 138 lb ft^{-3}	
□	56-28	573-1173		Fused SiO_2.	
△	52-12	293-1223		Vitreous silica.	
◇	56-35	295-672		Fused silica; density 138 lb ft^{-3}.	
▽	44-4	295-1183		Fused silica.	
▷	52-2	123-1023		Vycor from Corning Glass Works.	
◁	44-4	293-1198		Vycor No. 790 Silica Glass; 96 SiO_2, 3 B_2O_3, 0.4 $R_2O_3 + RO_2$ (chiefly Al_2O_3), and traces Na_2O, As_2O_3.	Melted, formed, heat treated above annealing pt. to separate it into 2 phases of which the unstable glass is leached out in hot dilute acid, washed, and dried.
▼	44-4	273-573		Same as above.	Same as above.
▲	44-4	273-573		Same as above.	Pulverized vycor, refined same as above.

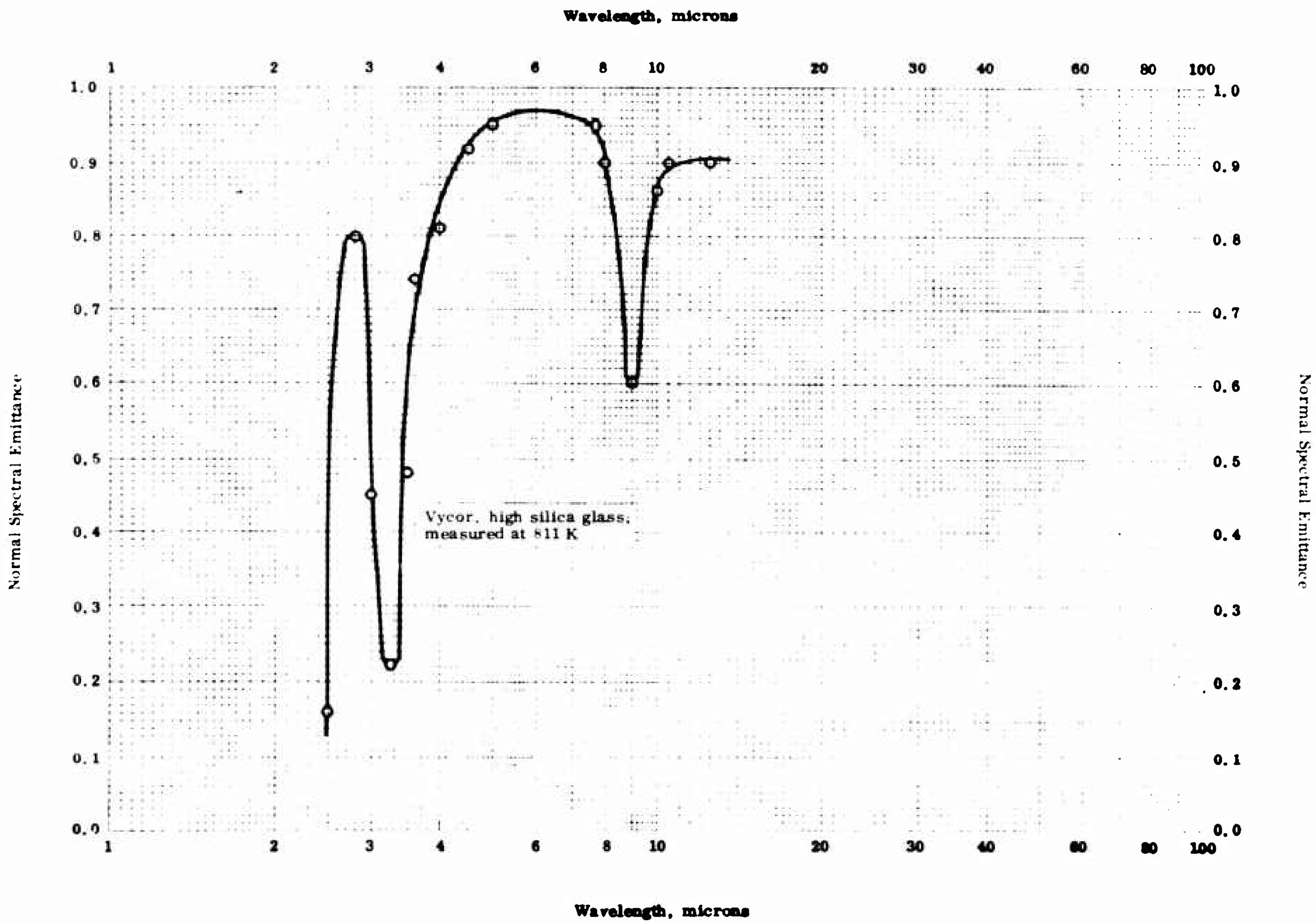


NORMAL TOTAL EMITTANCE -- SILICA GLASS

NORMAL TOTAL EMITTANCE -- SILICA GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-15	77-1030		Vycor, Corning No. 7900; 0.5 in. thickness.	
□	59-15	77-1033		Same as above; 0.1875 in. thickness.	
△	59-15	75-1028		Same as above; 0.3125 in. thickness.	
◇	59-15	77-1083		Fused silica, Corning No. 7940; 0.5 in. thickness.	

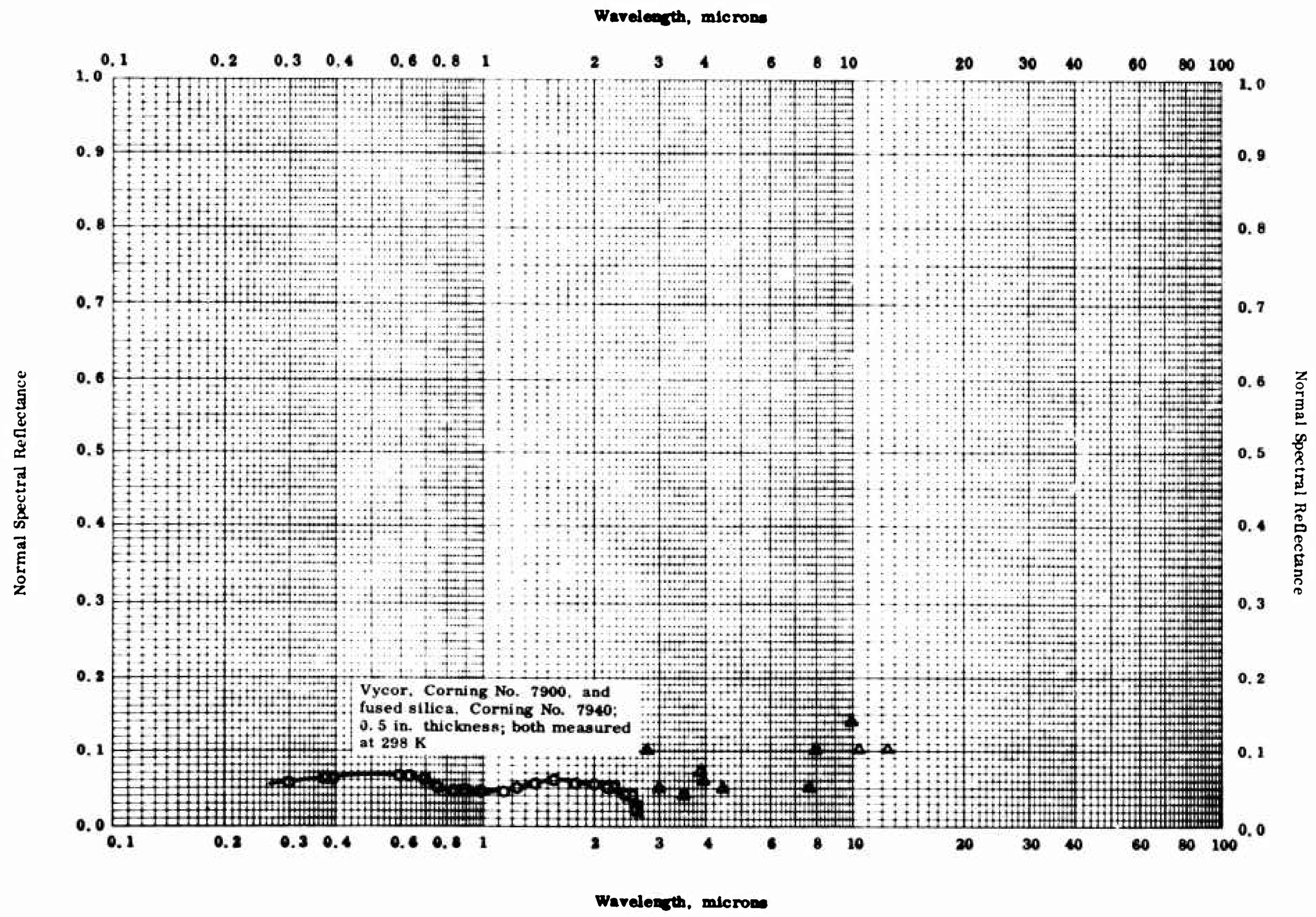


NORMAL SPECTRAL EMITTANCE -- SILICA GLASS

NORMAL SPECTRAL EMITTANCE -- SILICA GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	51-22	811	2.5-12.5		Vycor, high silica glass; 96.3 SiO_2, 2.9 B_2O_3, 0.4 R_2O_3 and < 0.04 (Na_2O + K_2O); 0.0625 in. thickness.	Data taken from smooth curve.

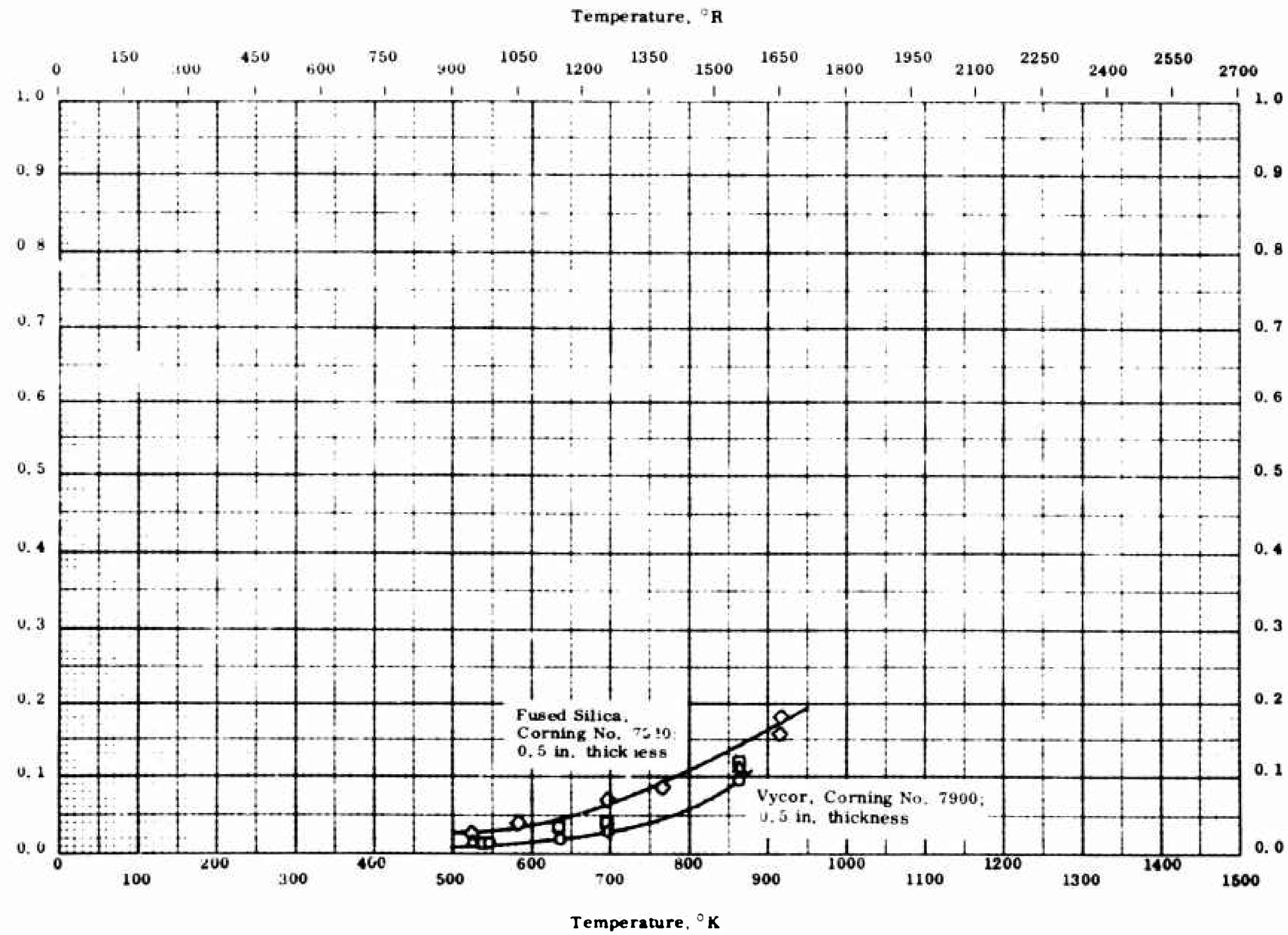


NORMAL SPECTRAL REFLECTANCE -- SILICA GLASS

NORMAL SPECTRAL REFLECTANCE -- SILICA GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	59-15	298	0.3-2.6	4	Vycor, Corning No. 7900; 0.5 in. thickness.	Data taken from smooth curve; 6° - 9° incidence, hemispherical viewing; $MgCO_3$ as reference standard.
□	59-15	298	0.3-2.6	4	Fused silica, Corning No. 7940; 0.5 in. thickness.	Same as above.
△	51-22	811	2.5-12.5		Vycor high silica glass, 96.3 SiO_2, 2.9 B_2O_3, 0.4 R_2O_3 and < 0.04 (Na_2O + K_2O); 0.0625 in. thickness.	Data taken from smooth curve; calculated from transmittance and emittance.

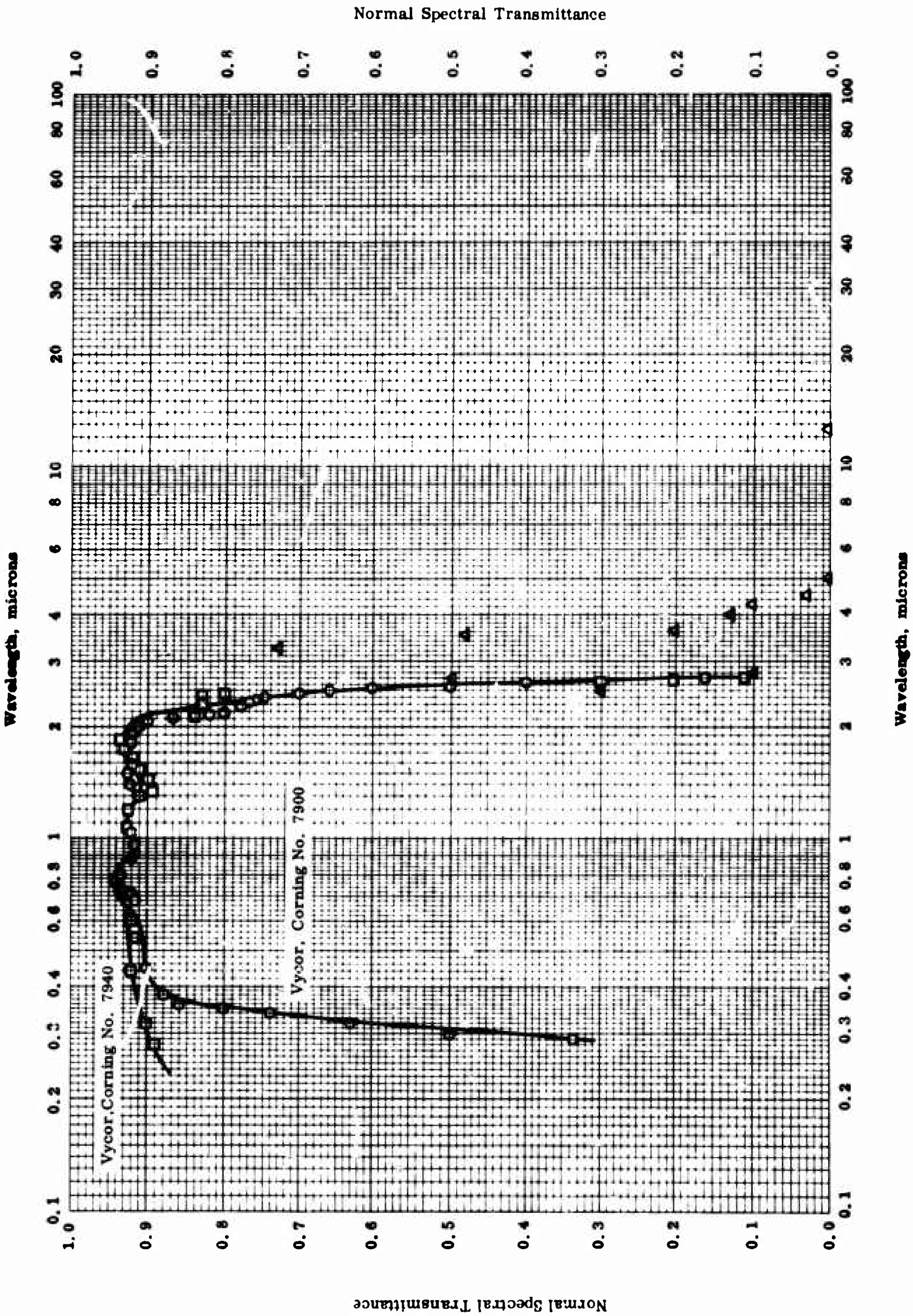


NORMAL TOTAL TRANSMITTANCE -- SILICA GLASS

NORMAL TOTAL TRANSMITTANCE -- SILICA GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-15	544-861		Vycor, Corning No. 7900; 0.5 in. thickness.	Reasonably flat parallel slab.
□	59-15	539-861		Same as above; 0.3125 in. thickness.	Same as above.
△	59-15	522-861		Same as above; 0.1875 in. thickness.	Same as above.
◇	59-15	525-916		Fused silica, Corning No. 7940; 0.5 in. thickness.	Same as above.

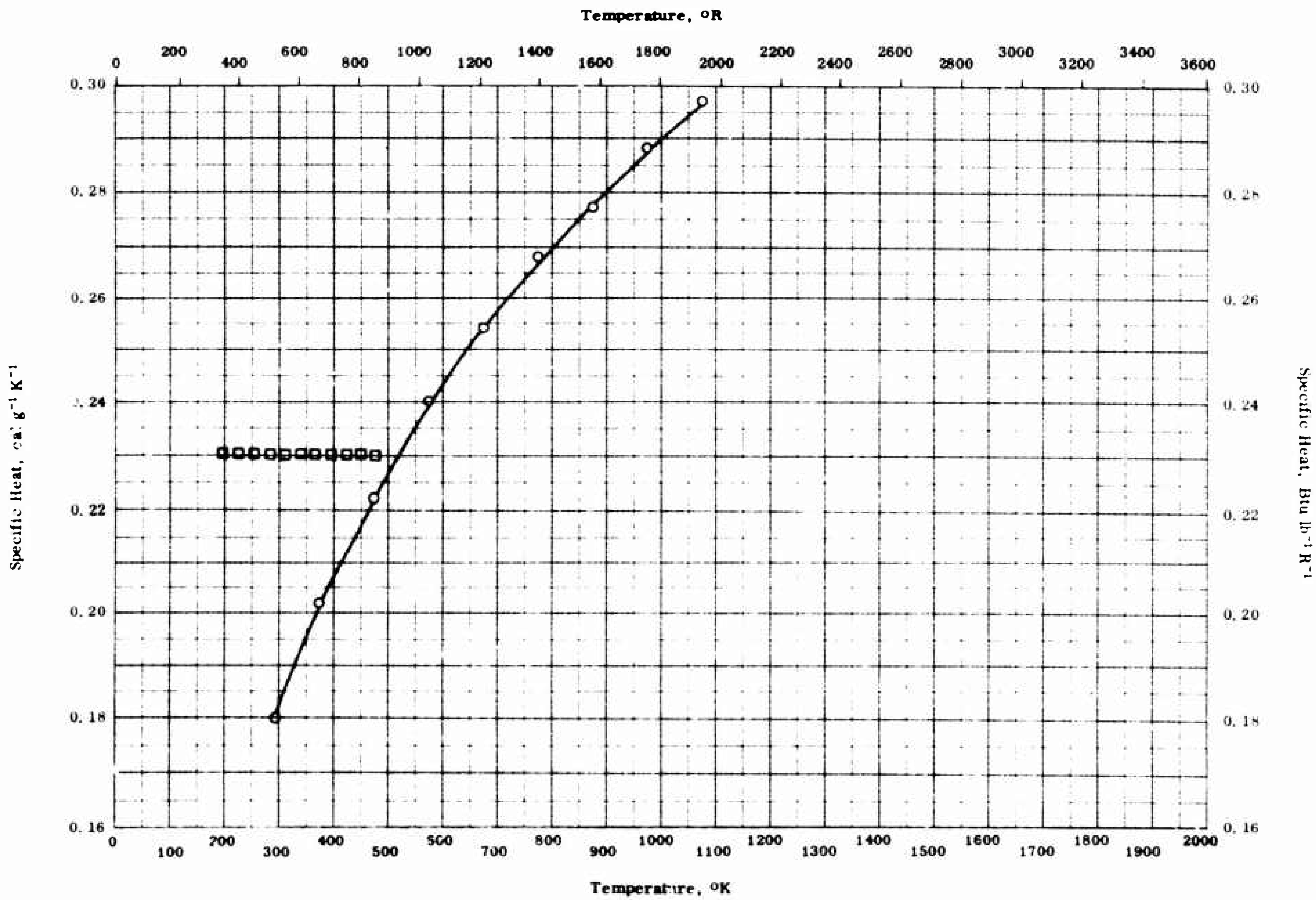


NORMAL SPECTRAL TRANSMITTANCE -- SILICA GLASS

NORMAL SPECTRAL TRANSMITTANCE -- SILICA GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	59-15	298	0.29-2.7		Vycor. Corning No. 7900; 0.5 in. thickness.	Reasonably flat parallel slab; data taken from a smooth curve.
□	59-15	298	0.28-2.7		Vycor, Corning No. 7940; 0.5 in. thickness.	Same as above.
△	51-22	811	2.5-12.5		Vycor, high silica glass; 96.3 SiO_2, 2.9 B_2O_3, 0.4 R_2O_3 and < 0.04 (Na_2O + K_2O); 0.0625 in. thickness.	Data taken from smooth curve.

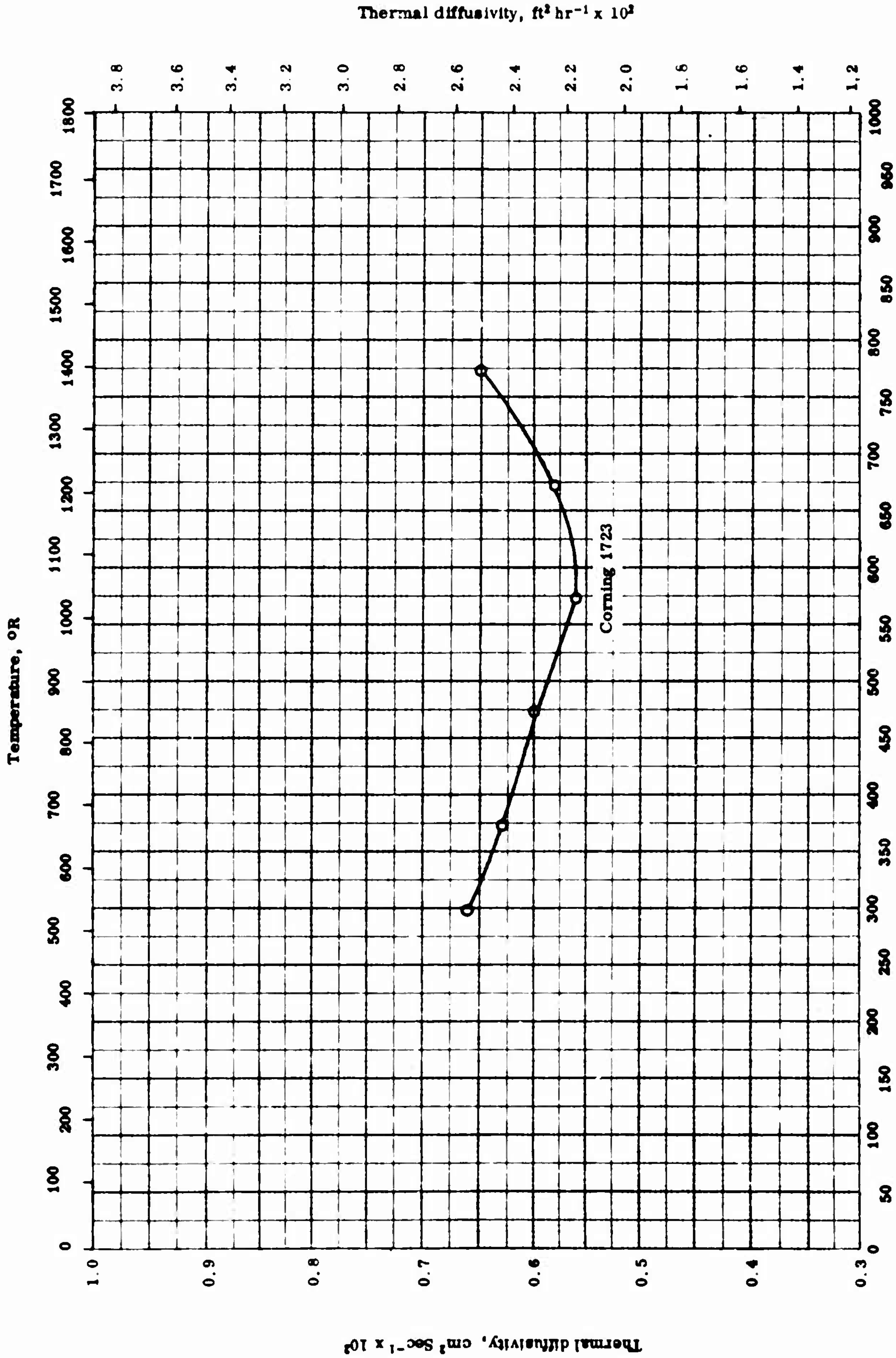


SPECIFIC HEAT -- ALUMINUM SILICATE GLASS

SPECIFIC HEAT -- ALUMINUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-8	393-1073		Aluminosilicate glass No. 1723 from Corning; density 164.1 lb ft^{-3}.	
□	58-12	200-478		Aluminosilicate glass No. 1723 from Corning.	

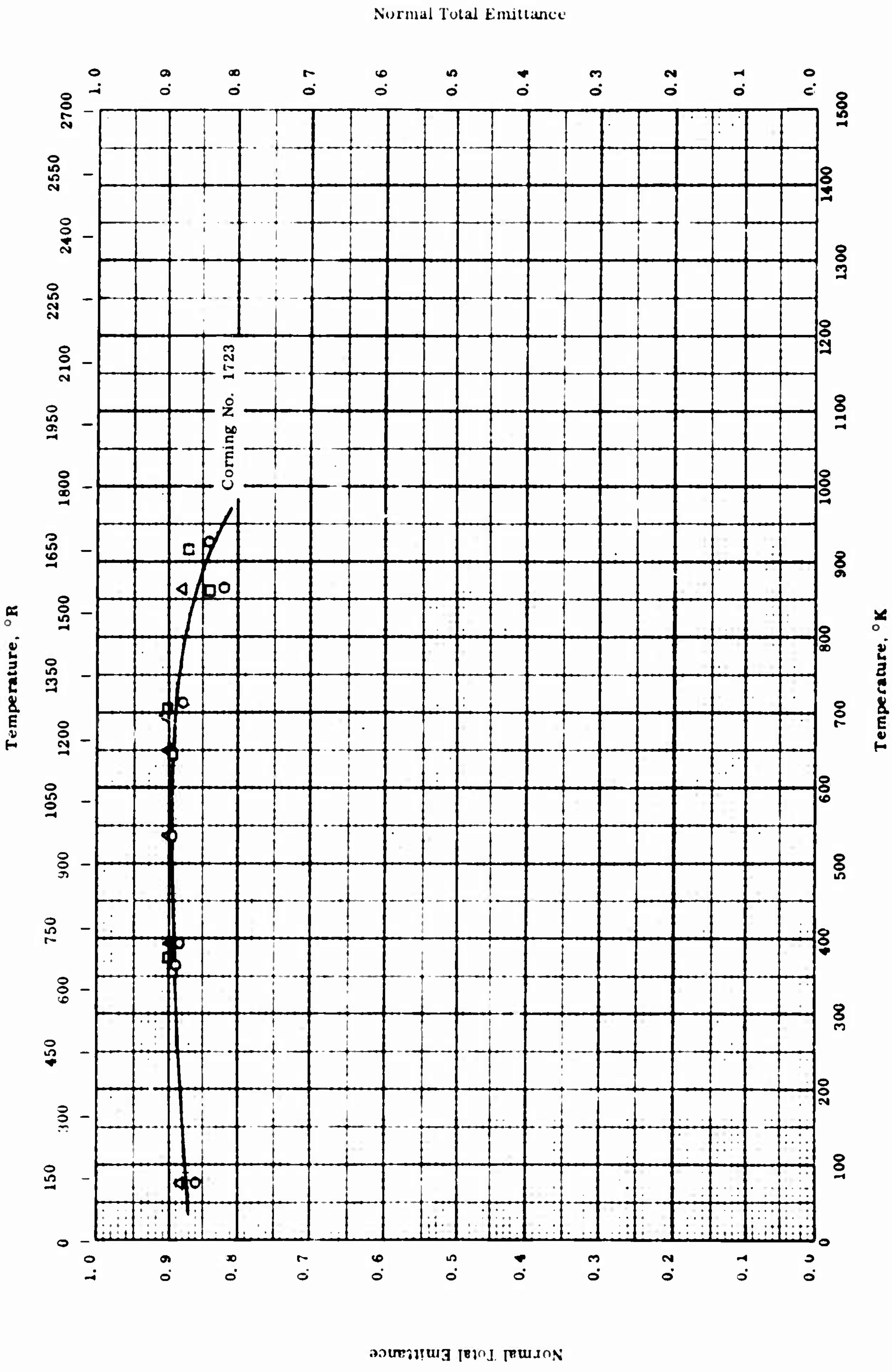


THERMAL DIFFUSIVITY -- ALUMINUM SILICATE GLASS
(Corning 1723)

THERMAL DIFFUSIVITY -- ALUMINUM SILICATE GLASS
(Corning 1723)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	62-1	298-773	15	Corning glass 1723; 57.7 SiO_2, 14.9 Al_2O_3, 10.1 CaO, 6.9 MgO, 6.0 BaO, and 4.0 B_2O_3.	Radiation included in last two data points.

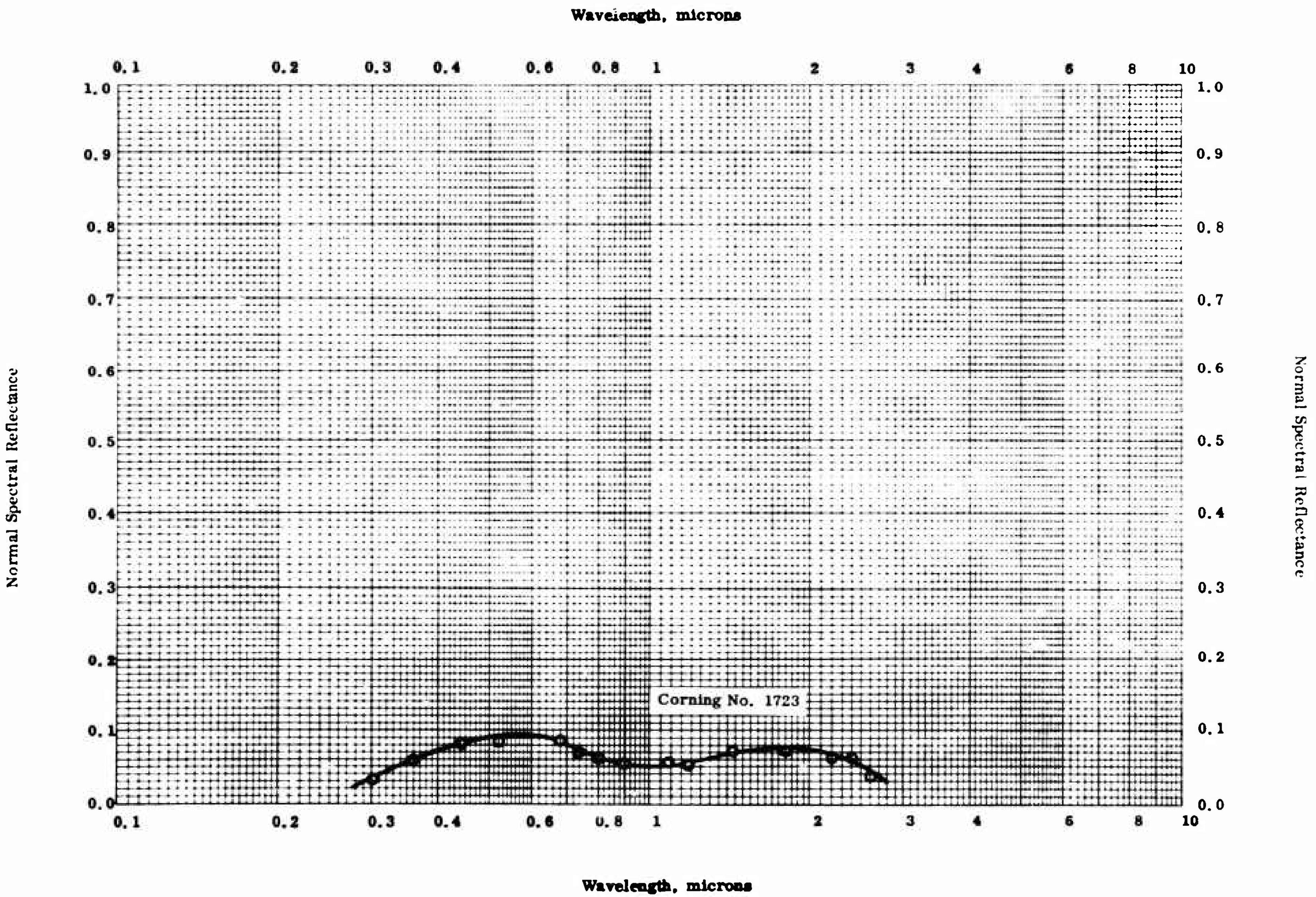


NORMAL TOTAL EMITTANCE -- ALUMINUM SILICATE GLASS

NORMAL TOTAL EMITTANCE — ALUMINUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-15	77-928		Corning No. 1723; 0.1875 in. thickness.	
□	59-15	77-916		Same as above; 0.3125 in. thickness.	
△	59-15	77-922		Same as above; 0.5 in. thickness.	

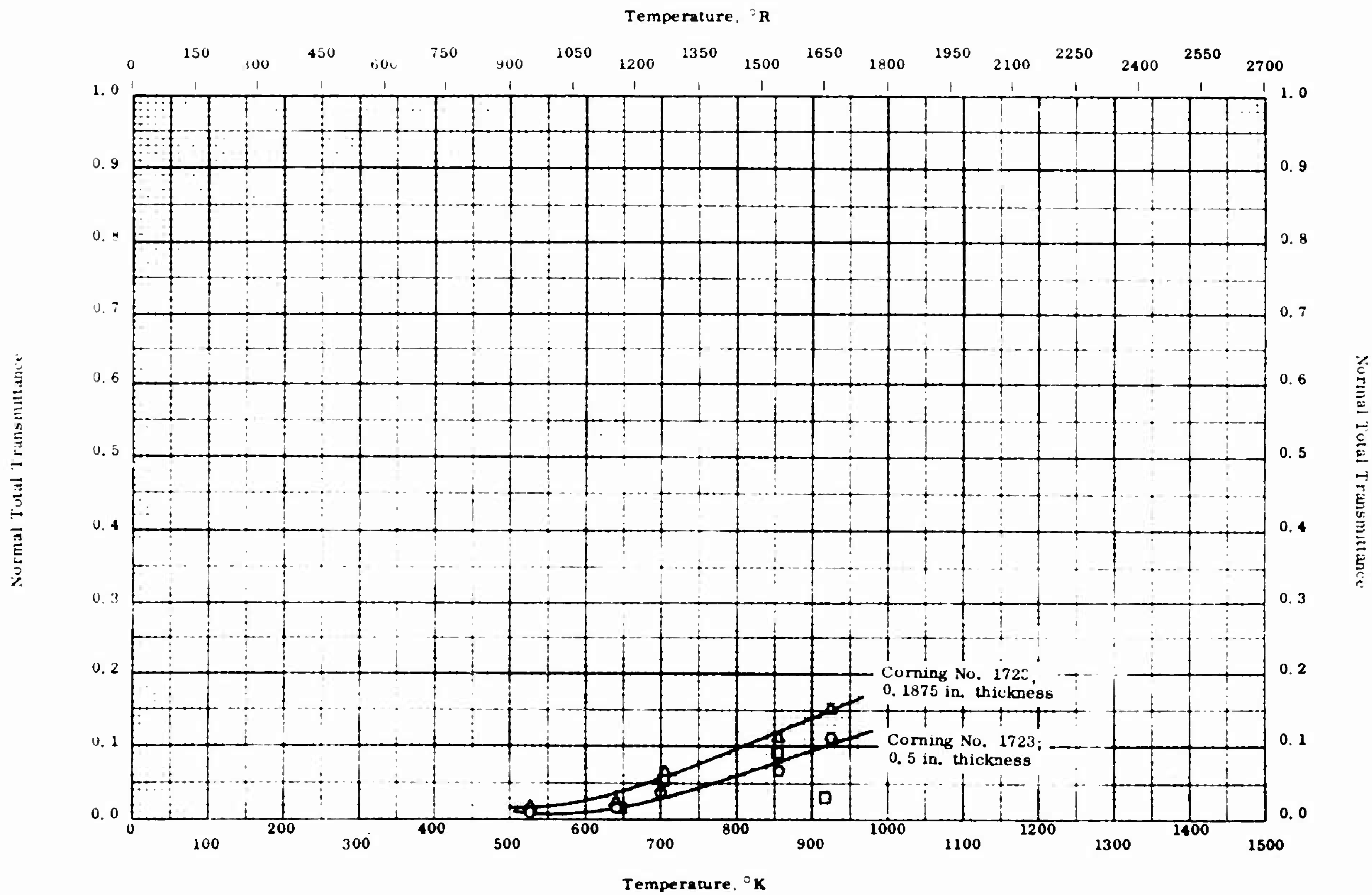


NORMAL SPECTRAL REFLECTANCE -- ALUMINUM SILICATE GLASS

NORMAL SPECTRAL REFLECTANCE -- ALUMINUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
O	59-15	298	0.3-2.6	4	Corning No. 1723; 0.5 in. thickness	Data taken from a smooth curve; 6° - 9° incidence, hemispherical viewing; $MgCO_3$ as reference standard.

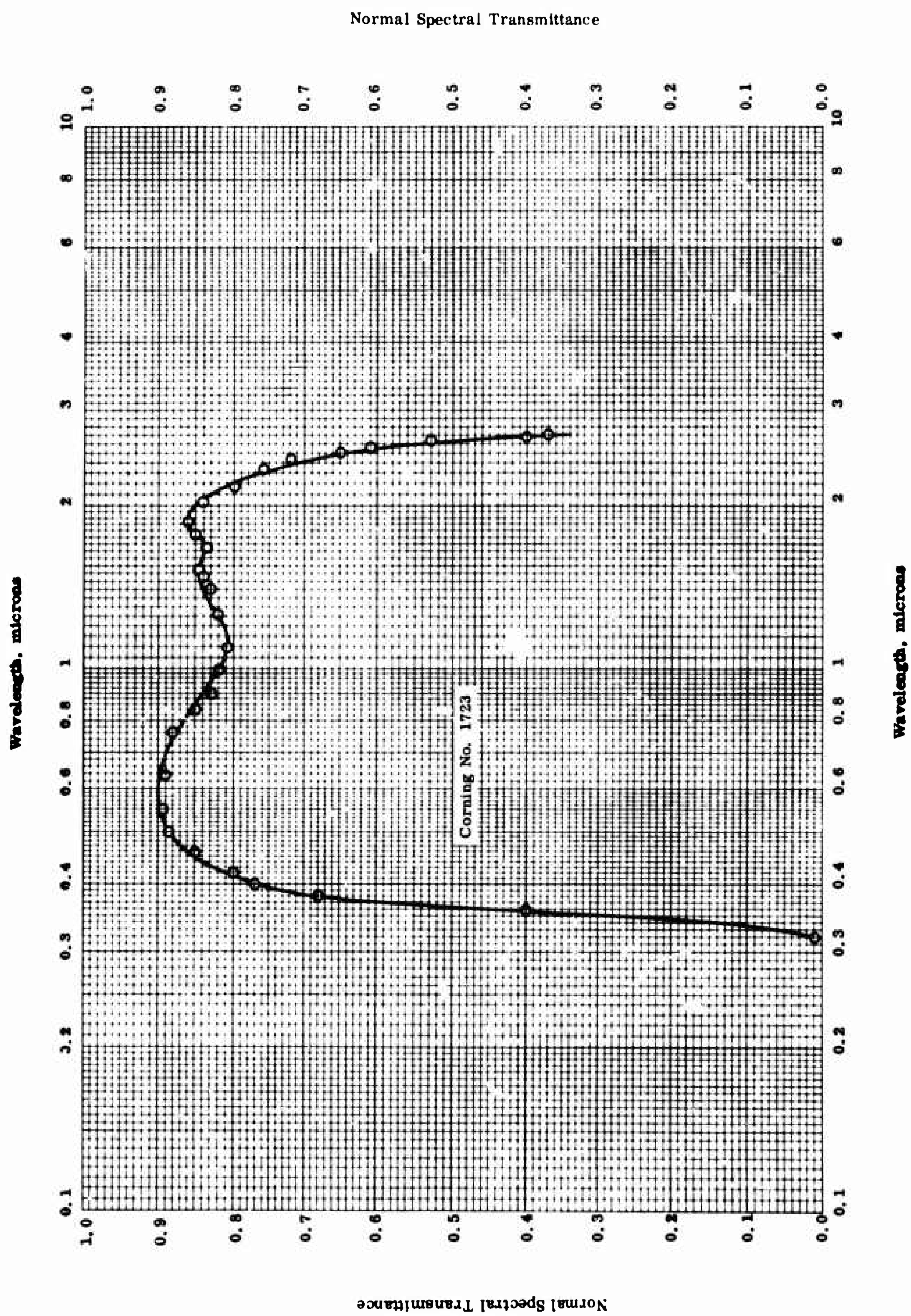


NORMAL TOTAL TRANSMITTANCE -- ALUMINUM SILICATE GLASS

NORMAL TOTAL TRANSMITTANCE -- ALUMINUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-15	528-922		Corning No. 1723; 0.5 in. thickness.	Reasonably flat parallel slab.
□	59-15	525-916		Same as above; 0.3125 in. thickness.	Same as above.
△	59-15	530-922		Same as above; 0.1875 in. thickness.	Same as above.

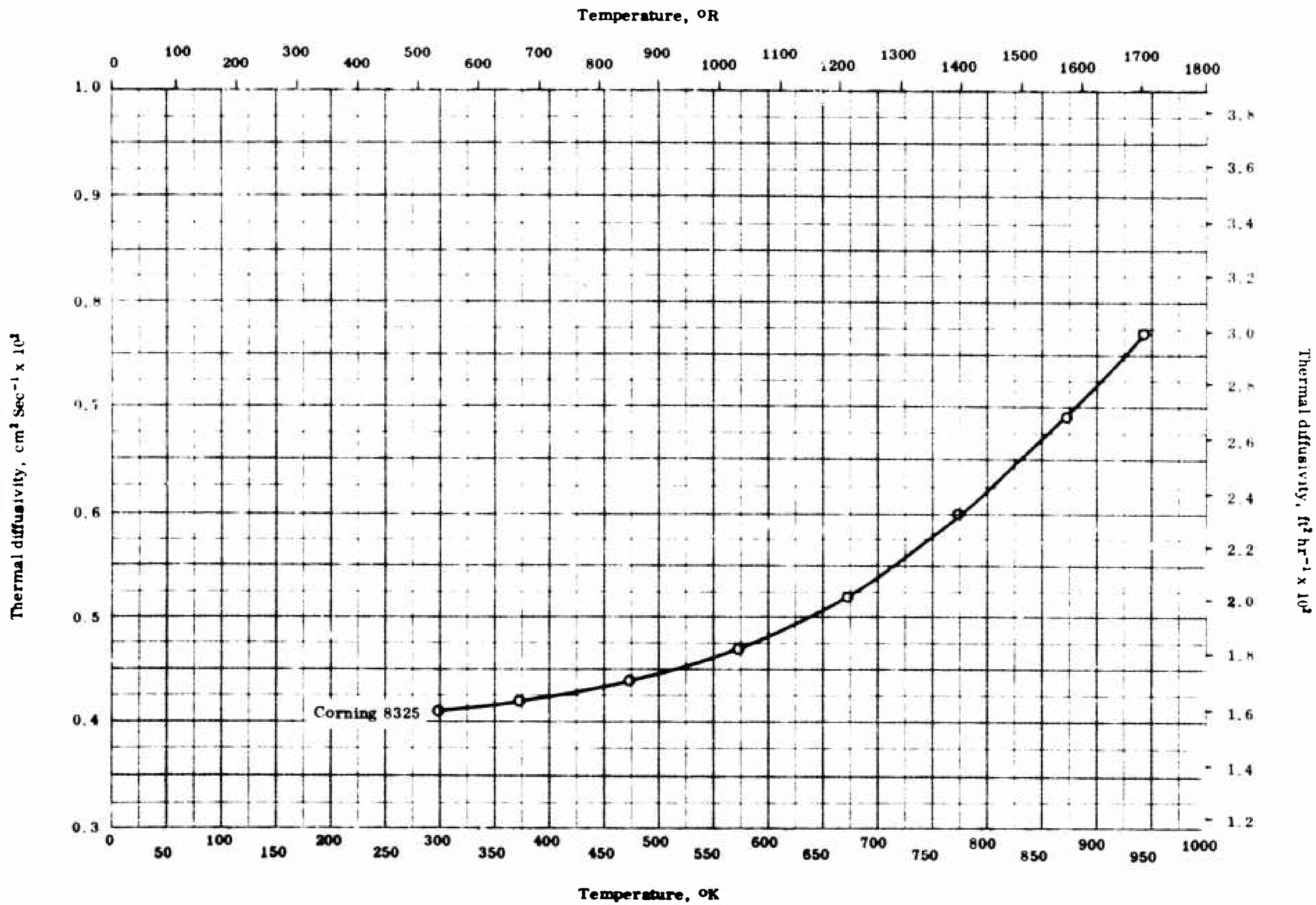


NORMAL SPECTRAL TRANSMITTANCE -- ALUMINUM SILICATE GLASS

NORMAL SPECTRAL TRANSMITTANCE -- ALUMINUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
O	59-15	298	0.32-2.7		Corning No. 1723; 0.5 in. thickness.	Data taken from smooth curve; reasonably flat parallel slab.

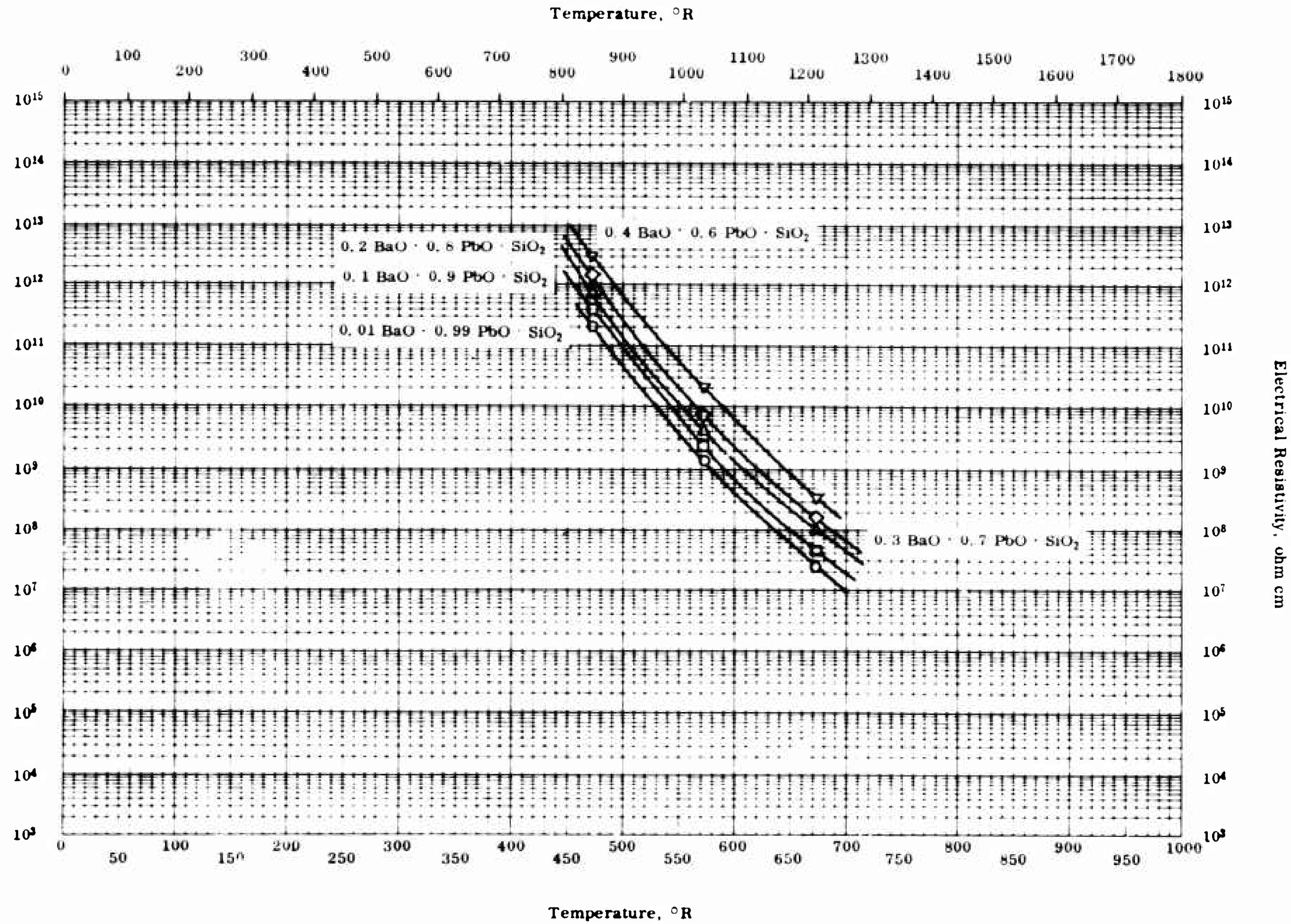


THERMAL DIFFUSIVITY -- BARIUM SILICATE GLASS
(Corning 8325)

THERMAL DIFFUSIVITY -- BARIUM SILICATE GLASS
(Corning 8325)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	62-1	298-943	15	Corning glass 8325; 44.6 SiO_2, 28.0 BaO, 7.0 ZrO_2, 6.7 Na_2O, 6.0 CaO, 4.0 ZnO, 2.4 K_2O, and 1.2 TiO_2.	Radiation contribution included in last four data points.

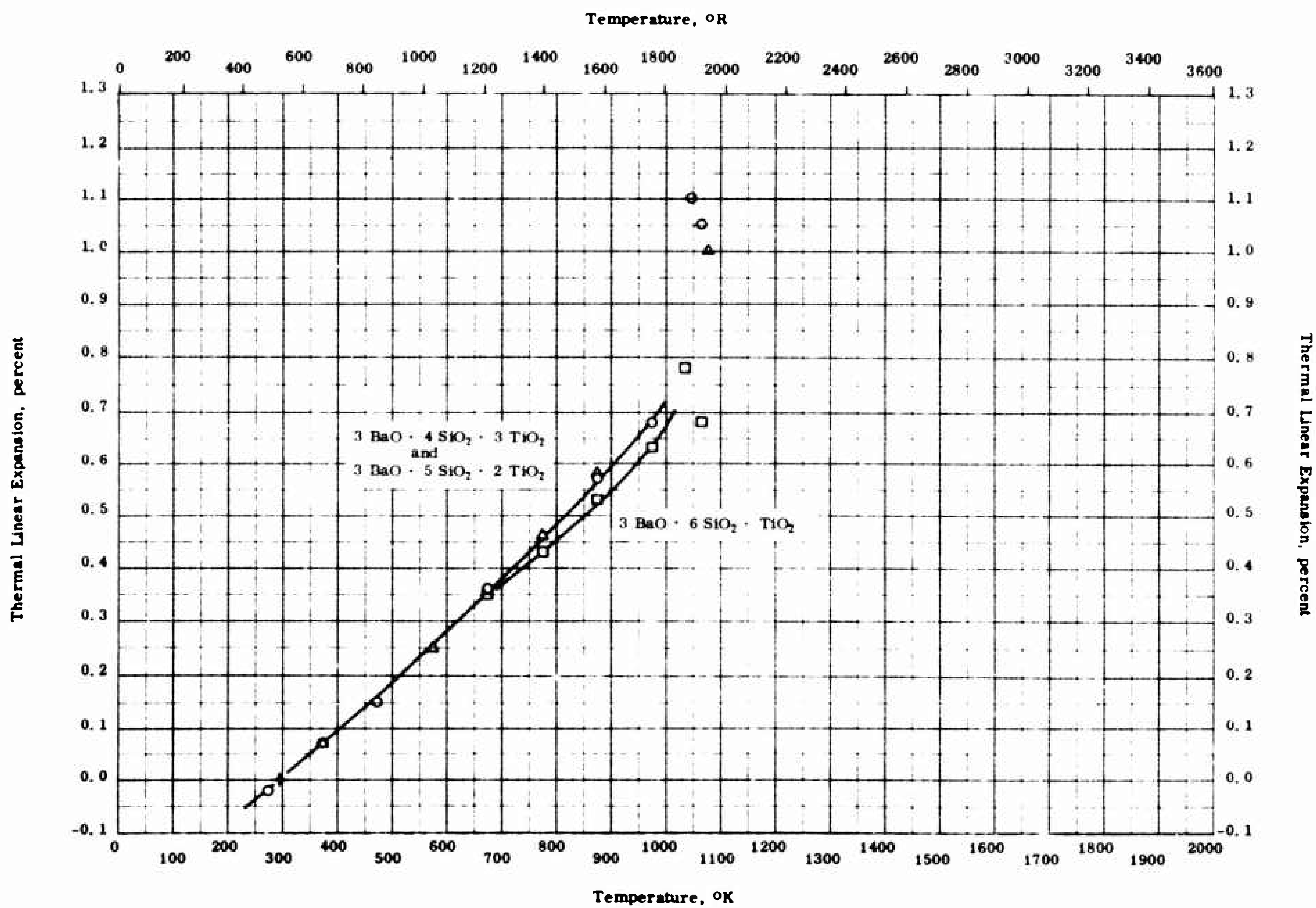


ELECTRICAL RESISTIVITY -- BARIUM LEAD SILICATE GLASS

ELECTRICAL RESISTIVITY -- BARIUM LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-12	473-673		0.01 BaO · 0.99 PbO · SiO_2, made from reagent grade materials	Ground, melted, cast, annealed overnight, ground flat; heated at 10 C min^{-1}.
□	56-12	473-673		0.1 BaO · 0.9 PbO · SiO_2, same as above.	Same as above.
△	56-12	473-673		0.2 BaO · 0.8 PbO · SiO_2, same as above.	Same as above.
◇	56-12	473-673		0.3 BaO · 0.7 PbO · SiO_2, same as above.	Same as above.
▽	56-12	473-673		0.4 BaO · 0.6 PbO · SiO_2, same as above.	Same as above.



THERMAL LINEAR EXPANSION -- BARIUM TITANIUM SILICATE GLASS

THERMAL LINEAR EXPANSION -- BARIUM TITANIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-32	273-1063		3 BaO : 4 SiO_2 : 3 TiO_2; 48.9 BaO, 25.6 SiO_2, and 25.5 TiO_2.	
△	56-32	273-1073		3 BaO : 5 SiO_2 : 2 TiO_2; 50.0 BaO, 32.6 SiO_2, and 17.4 TiO_2.	
□	56-32	273-1063		3 BaO : 6 SiO_2 : TiO_2; 51.1 BaO, 40.0 SiO_2, and 8.9 TiO_2.	

PROPERTIES OF BOROSILICATE GLASS

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density	2.52*	157*
Annealing Point	828*	1491*

* Value for borosilicate crown glass

REPORTED VALUES

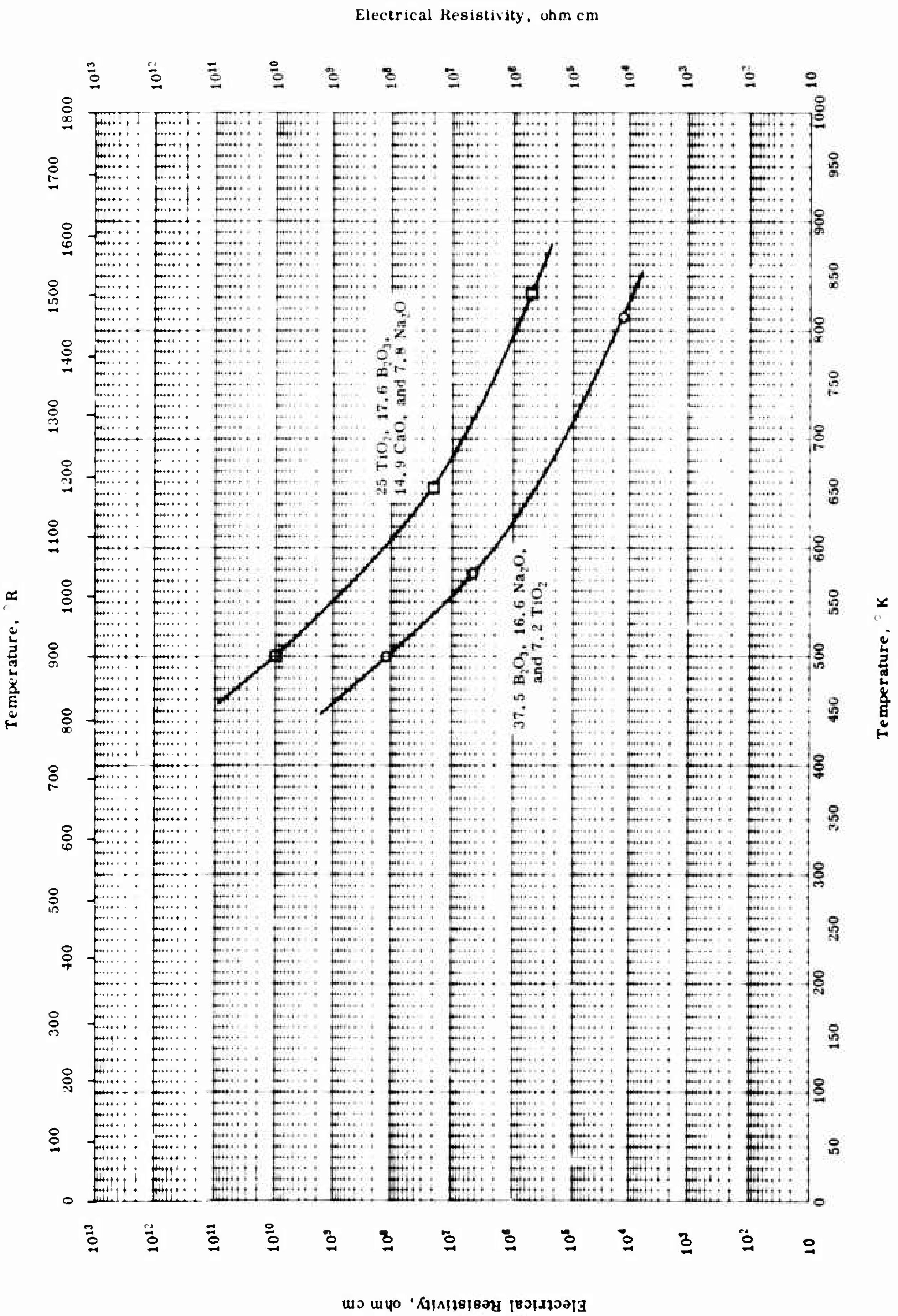
		$g\,cm^{-3}$	$lb\,ft^{-3}$
Density			
	○	2.2208	138.64
	◇	2.2210	138.66
	□	2.5271	157.74
		2.5193	157.25
		2.5167	157.09
		2.5110	156.74

		K	R
Annealing Point			
	▽	828	1491

PROPERTIES OF BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-2	293		Pyrex clear chemical glass No. 774, made by Cincinnati Gasket and Packing Co.	
◇	51-17	298		Pyrex clear chemical glass No. 774, made by Cincinnati Gasket and Packing Co.	Weight in air and in water.
▽	57-23	828		Borosilicate crown glass; nominal: 70 SiO_2, 11 B_2O_3, 9 Na_2O, 7 K_2O, and 3 BaO.	
□	57-23	298		Same as above.	Density computed by Newton-Drude equation $\frac{n^2 - 1}{\rho}$ = const. Index of refraction: Grauer V-block refractometer; 4 samples.

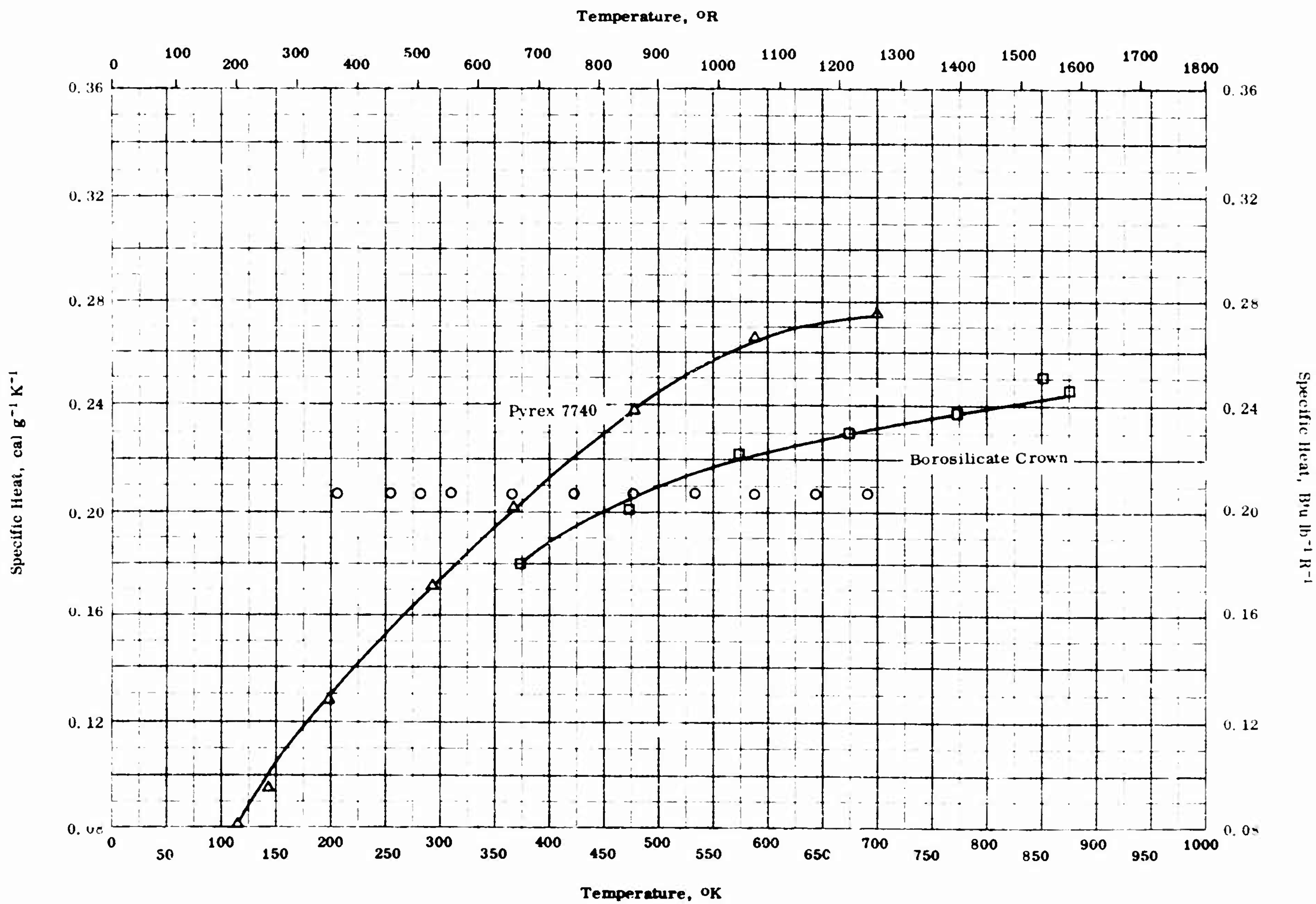


ELECTRICAL RESISTIVITY -- BOROSILICATE GLASS

ELECTRICAL RESISTIVITY -- BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-21	500-813		Borosilicate glass; 38.7 SiO_2, 37.5 B_2O_3, 16.6 Na_2O and 7.2 TiO_2.	Glassy phase.
□	53-21	500-833		34.7 SiO_2, 25 TiO_2, 17.6 B_2O_3, 14.9 CaO, and 7.8 Na_2O.	Glassy phase.

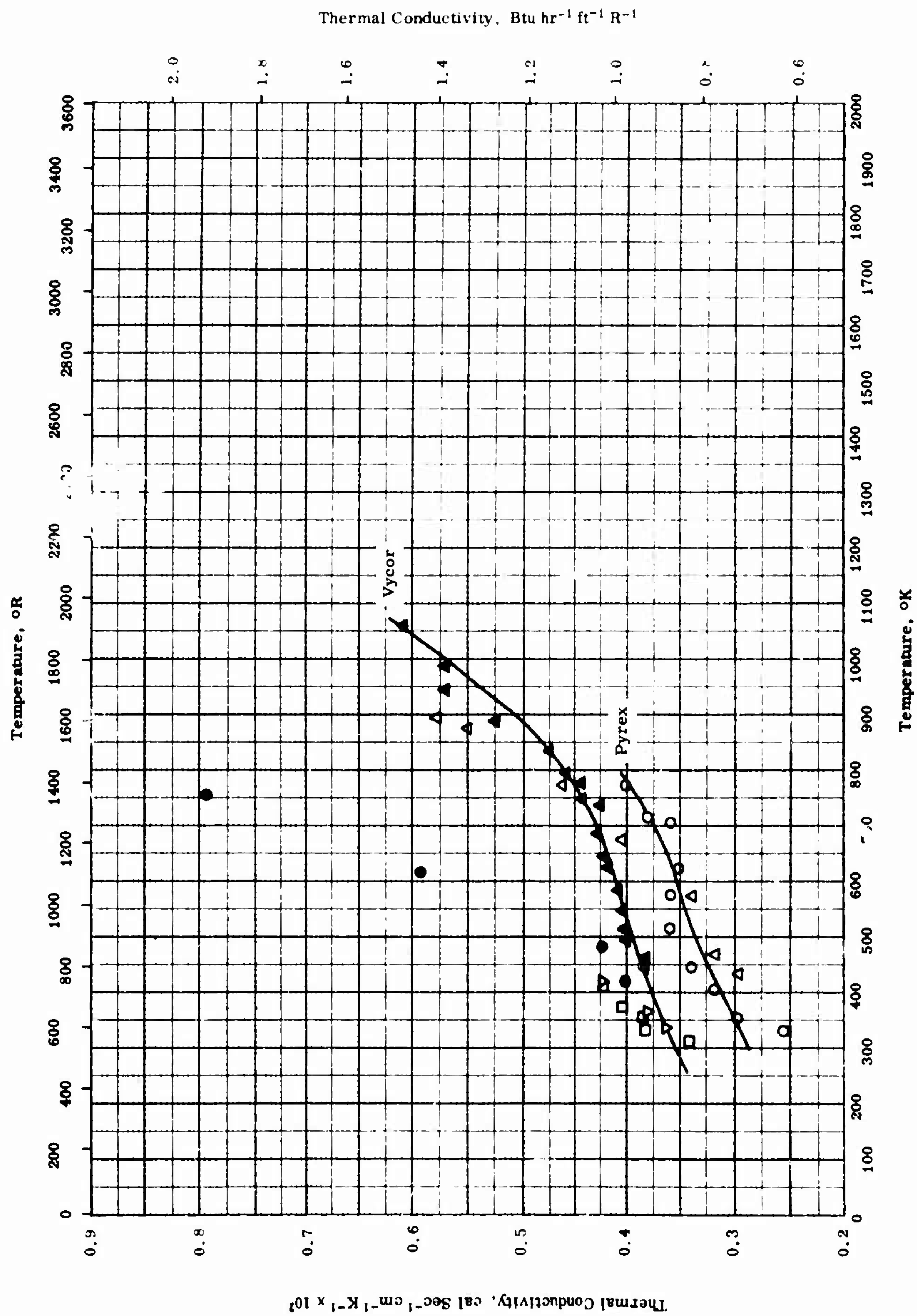


SPECIFIC HEAT -- BOROSILICATE GLASS

SPECIFIC HEAT -- BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-12	206-691		Borosilicate Glass; Pittsburgh Plate Glass No. 3235.	
△	54-4 also 60-1	116-700	± 1	Borosilicate Pyrex glass 7740; density 138 lb ft^{-3} at 32 F.	Sealed under helium atmosphere.
□	55-22	373-873		Borosilicate crown glass.	

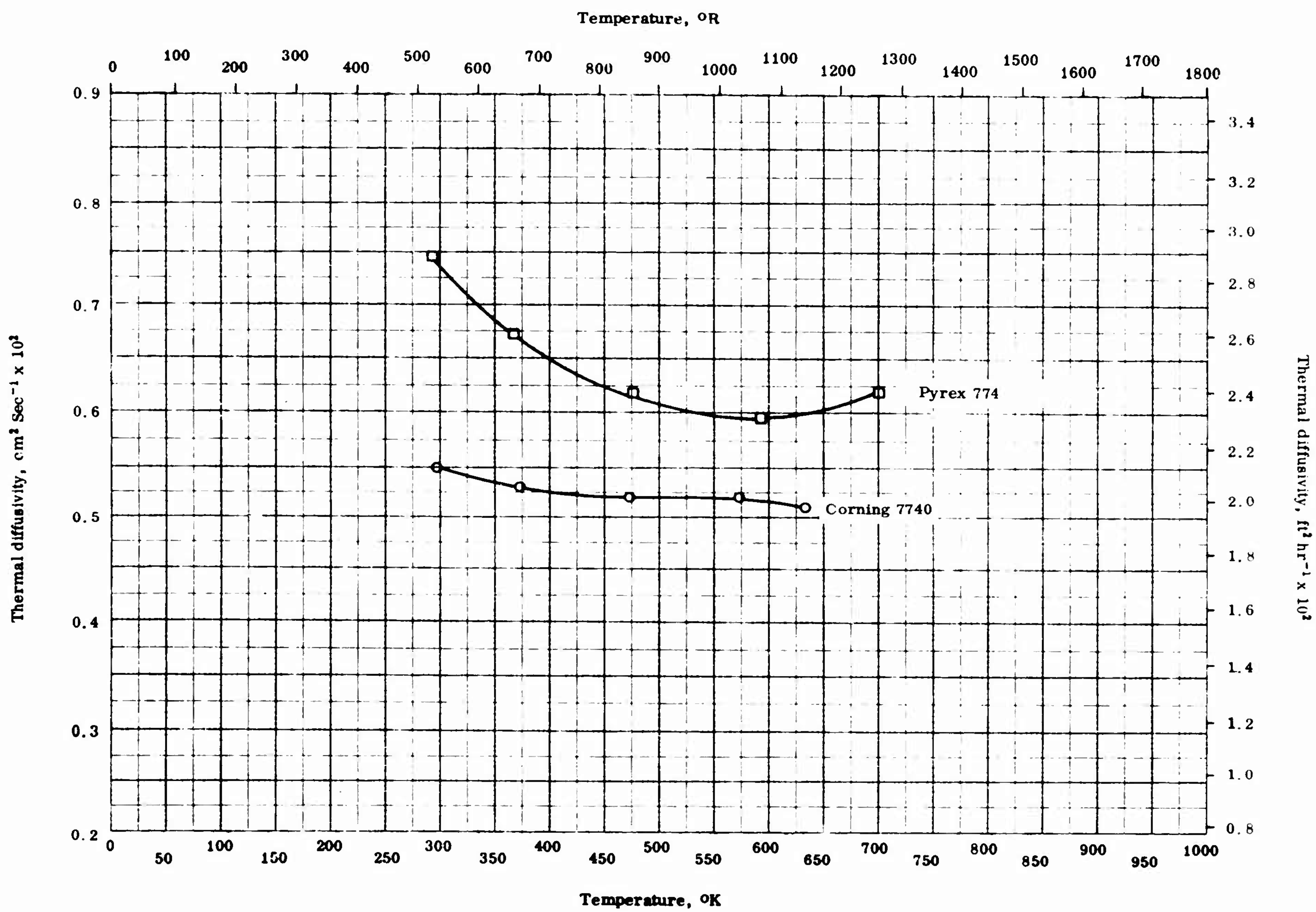


THERMAL CONDUCTIVITY -- BOROSILICATE GLASS

THERMAL CONDUCTIVITY -- BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-2	331-768		Pyrex Glass No. 774 (clear chemical glass).	
□	53-3	311-417		Pyrex Glass; density 139 lb ft^{-3}	Tested in vacuum.
▽	53-3	317-422		Borosilicate Glass (Am. Ceram. Soc. standard glass); density 147 lb ft^{-3}.	Same as above.
△	54-5	433-893		Pyrex Glass.	
●	43-1	389-753		Pyrex Glass; 80.5 SiO_2, 12.9 B_2O_3, 3.8 Na_2O, 2.2 Al_2O_3 and 0.4 K_2O.	
▲	54-4	442-1060		Vycor Glass.	

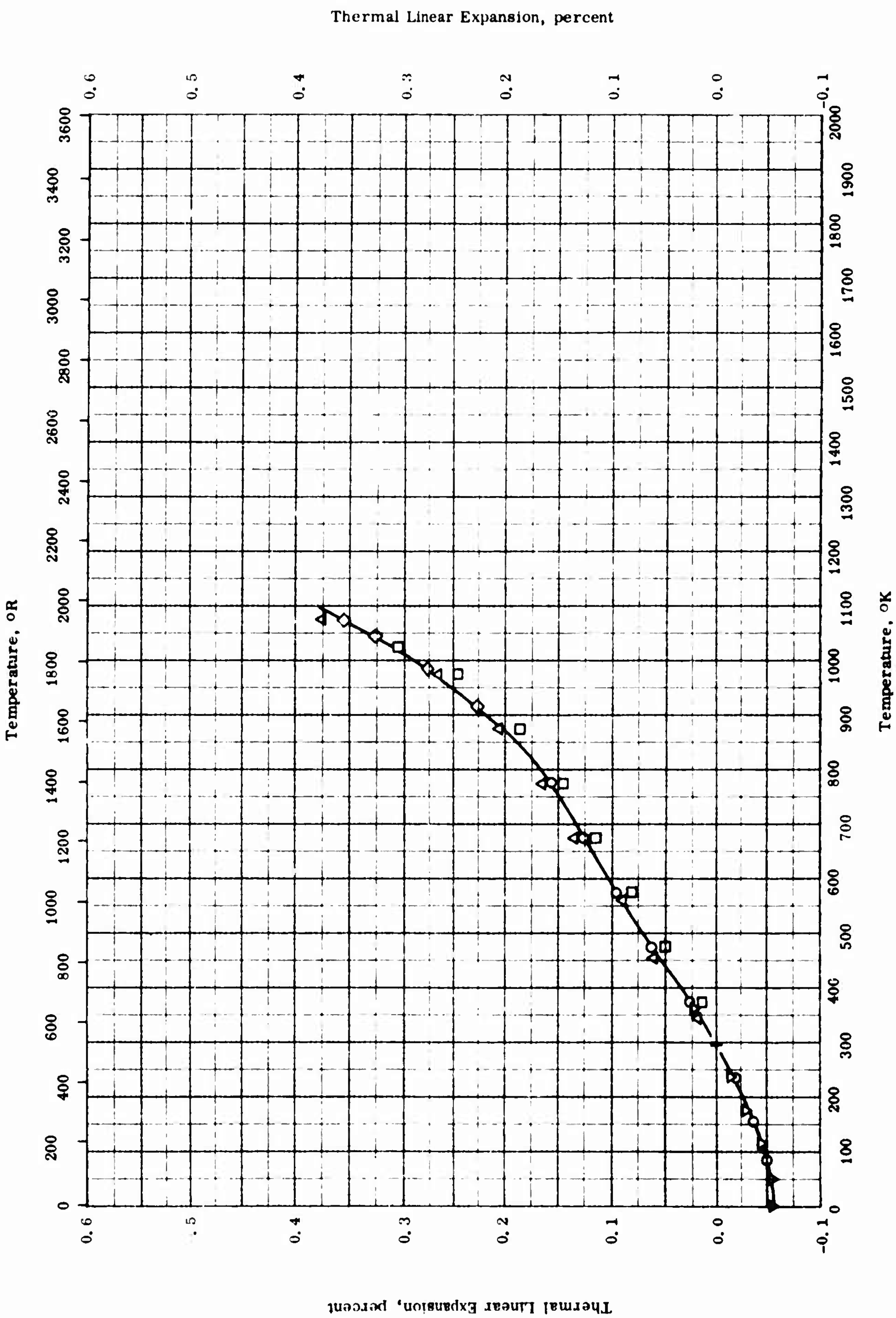


THERMAL DIFFUSIVITY -- BOROSILICATE GLASS

THERMAL DIFFUSIVITY -- BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	62-1	298-633	15	Corning Glass 7740: 80.4 SiO_2, 13.3 B_2O_3, 4.4 Na_2O, and 2.0 Al_2O_3.	
□	62-3	293-700		Pyrex 774 from Cincinnati Gasket and Packing Co.	

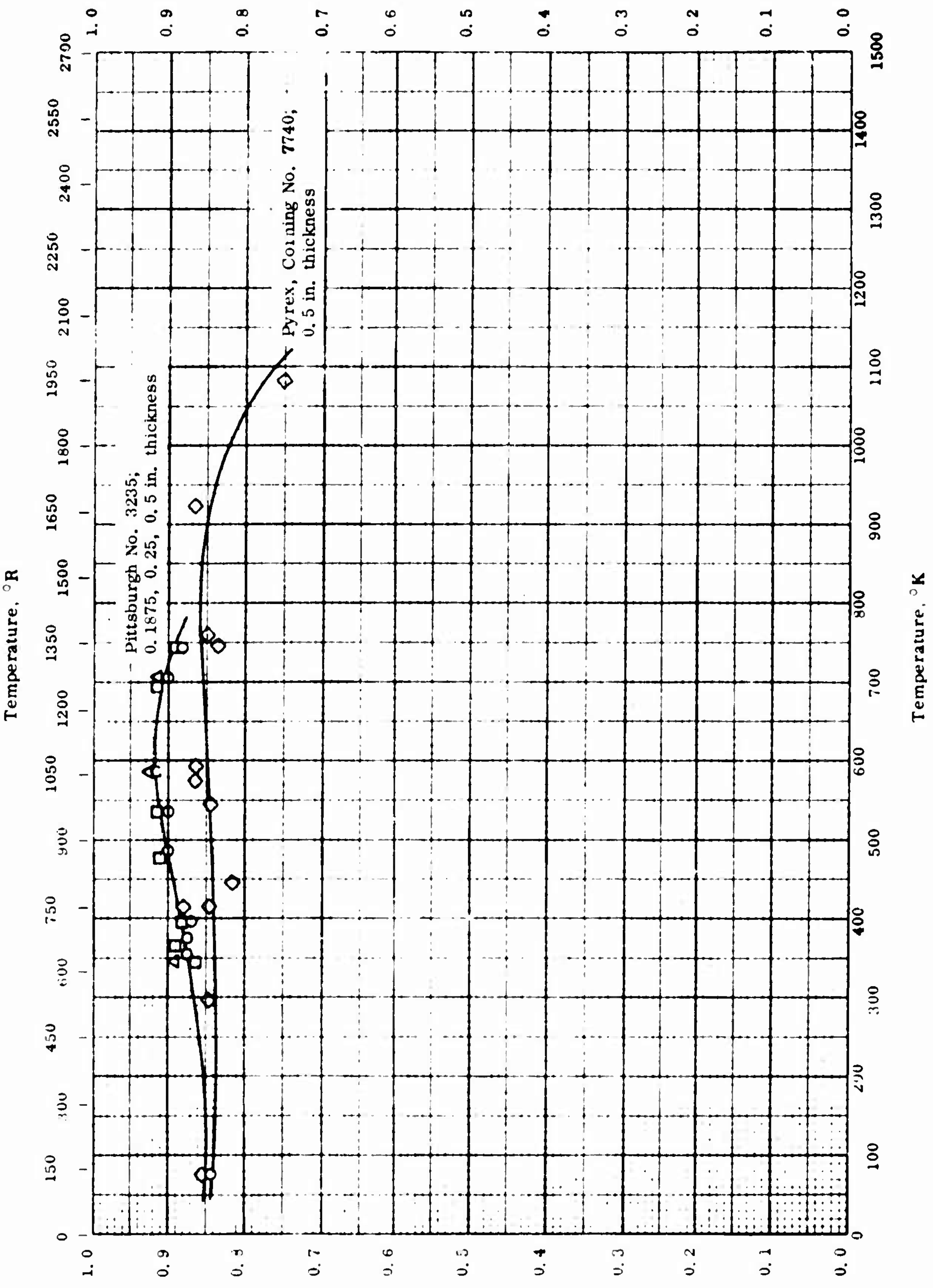


THERMAL LINEAR EXPANSION -- BOROSILICATE GLASS

THERMAL LINEAR EXPANSION -- BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-2	83-773		Pyrex Glass No. 774, clear chemical glass; made by Cincinnati Gasket and Packing Co.	
□	51-30	322-1022		Pyrex Borosilicate Glass, 80 SiO_2.	Data taken during cooling from 750 C.
△	51-30	306-1072		Same as above.	Data taken during second cooling and heating.
◇	51-30	917-1072		Same as above.	Data taken at high temperature.
▽	52-27	0-361		Pyrex 774.	

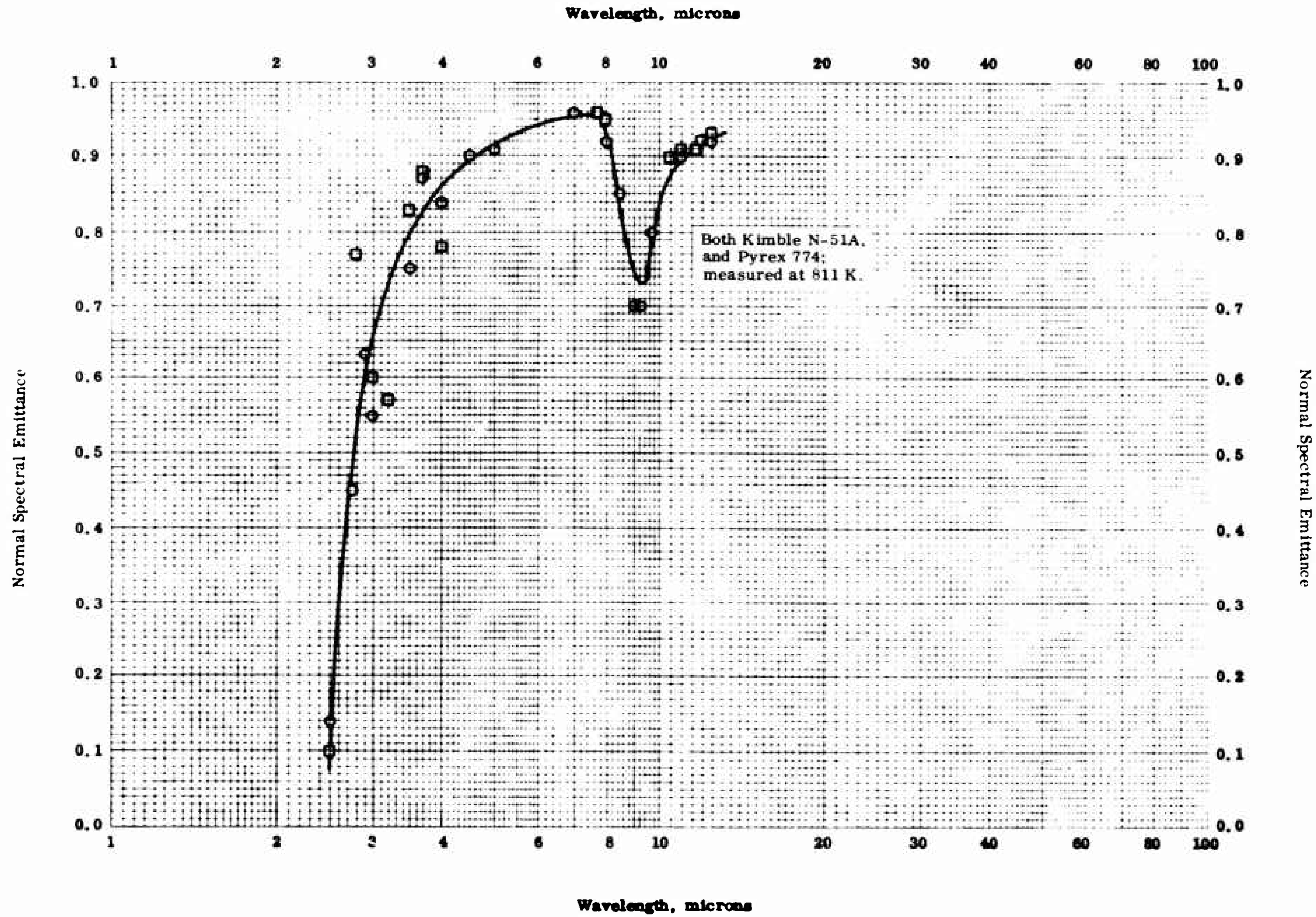


NORMAL TOTAL EMITTANCE -- BOROSILICATE GLASS

NORMAL TOTAL EMITTANCE -- BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-15	77-744		Borosilicate glass, Pittsburgh No. 3235; 0.1875 in. thickness.	
□	59-15	77-744		Same as above; 0.25 in. thickness.	
△	59-15	77-744		Same as above; 0.5 in. thickness.	
◇	59-15	77-1083		Pyrex. Corning No. 7740; 0.5 in. thickness.	

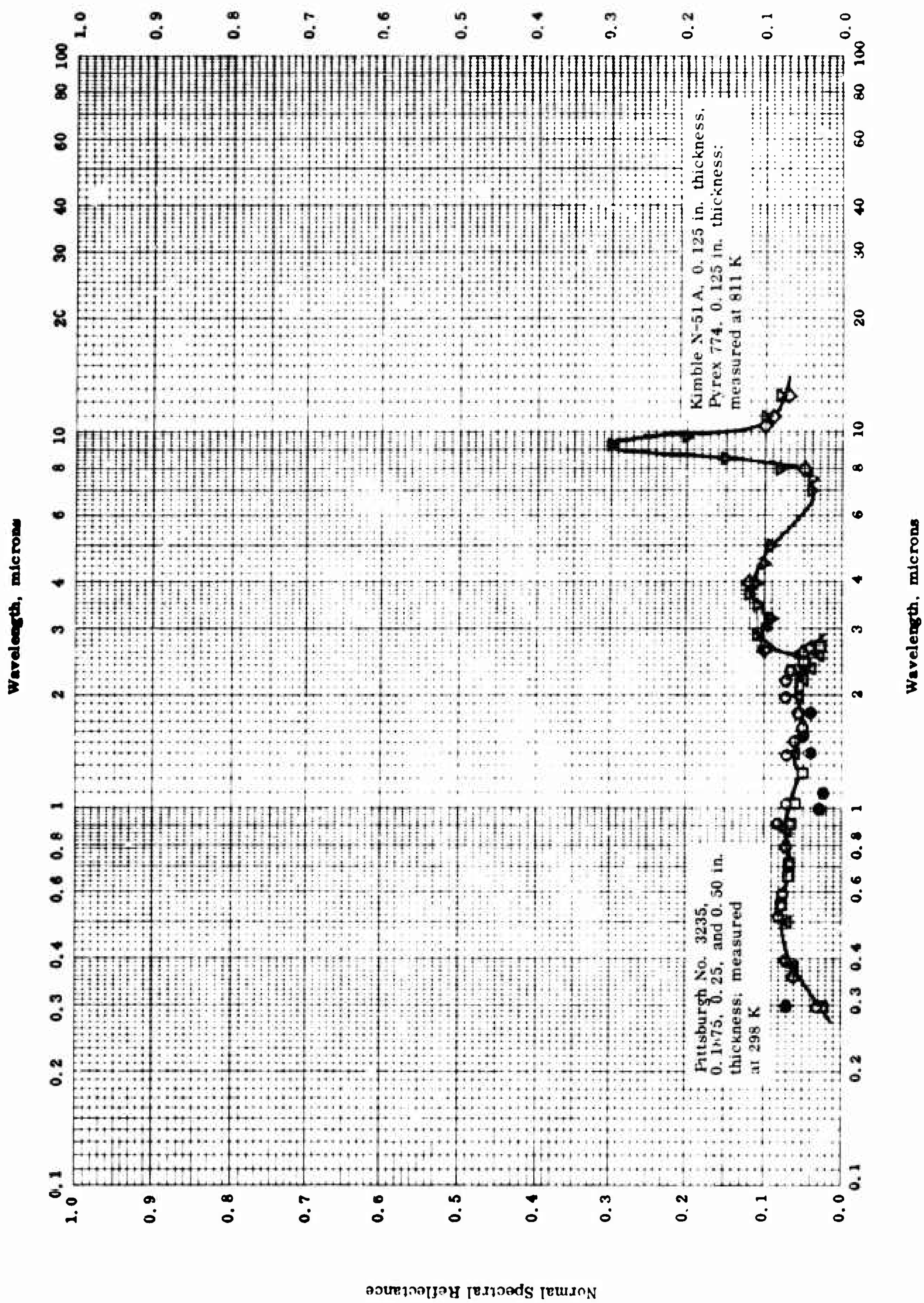


NORMAL SPECTRAL EMITTANCE -- BOROSILICATE GLASS

NORMAL SPECTRAL EMITTANCE -- BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	51-22	811	2.5-12.5		Kimble N-51A; 74.7 SiO_2, 9.6 B_2O_3, 6.9 ($Na_2O + K_2O$), 5.6 R_2O_3, 2.2 BaO, and 0.9 CaO; 0.125 in. thickness.	Data taken from smooth curve.
□	51-22	811	2.5-12.5		Pyrex 774; 81 SiO_2, 13 B_2O_3, 3.[illegible] ($Na_2O + K_2O$), and 2.2 R_2O_3; 0.125 in. thickness.	Same as above.

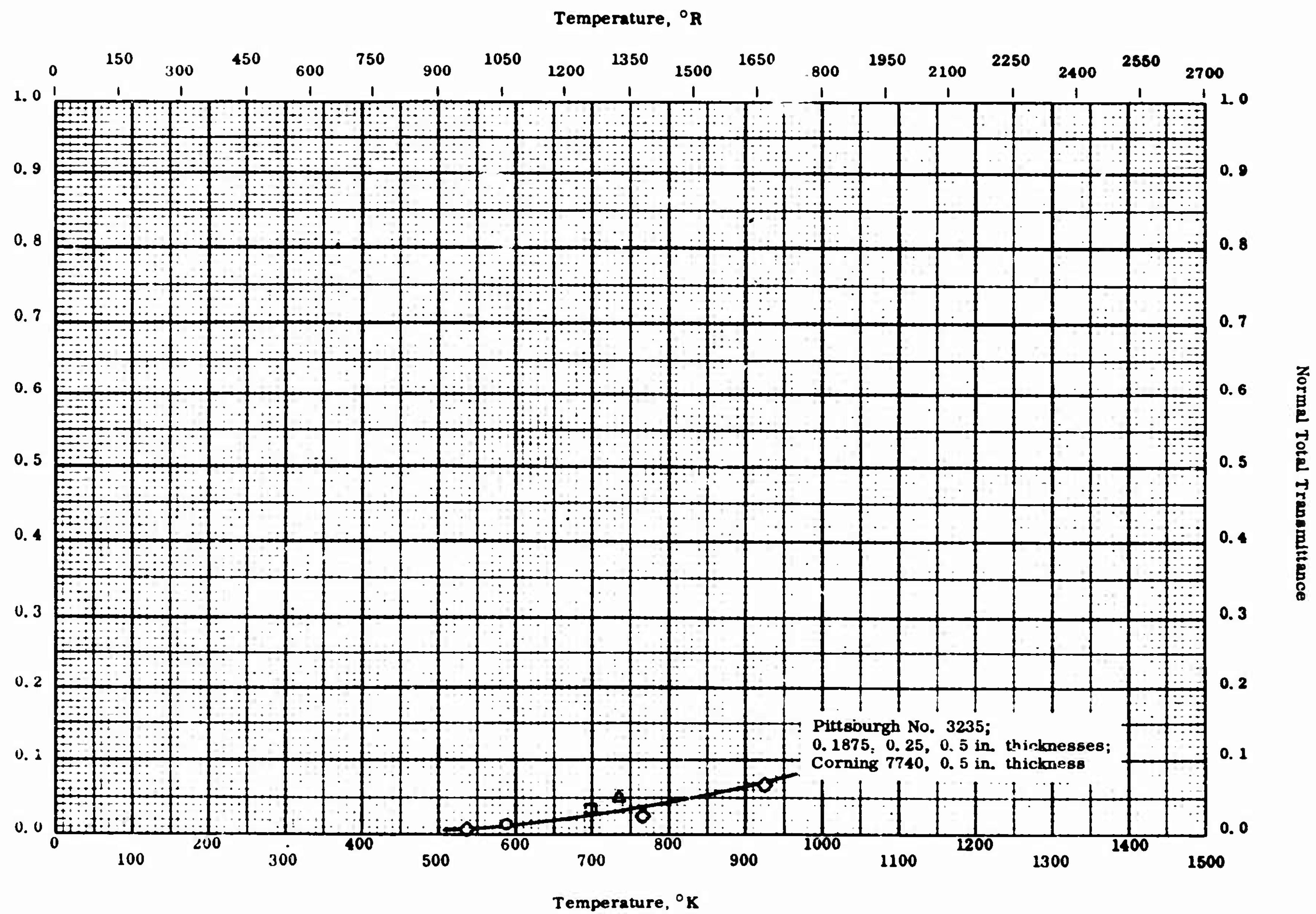


NORMAL SPECTRAL REFLECTANCE -- BOROSILICATE GLASS

NORMAL SPECTRAL REFLECTANCE -- BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	59-15	298	0.3-2.7	4	Borosilicate glass, Pittsburgh No. 3235; 0.1875 in. thickness.	Data taken from smooth curve; 6-9 degrees incidence, hemispherical viewing; $MgCO_3$ as reference standard.
□	59-15	298	0.3-2.7	4	Same as above; 0.25 in. thickness.	Same as above.
△	59-15	298	0.3-2.7	4	Same as above; 0.5 thickness.	Same as above.
▽	51-22	811	2.5-12.5		Kimble N-51A; 74.7 SiO_2, 9.6 B_2O_3, 6.9 ($Na_2O + K_2O$), 5.6 R_2O_3, 2.2 BaO, and 0.9 CaO; 0.125 in. thickness.	Data taken from smooth curve; calculated from transmittance and emittance.
◇	51-22	811	2.5-12.5		Pyrex 774, 81 SiO_2, 13 B_2O_3, 3.8 ($Na_2O + K_2O$) and 2.2 R_2O_3; 0.125 in. thickness.	Data taken from smooth curve; calculated from transmittance and emittance.
●	59-15	298	0.3-2.6	4	Corning 7740; 0.5 in. thickness.	Data taken from smooth curve; 6-9 degrees incidence, hemispherical viewing; $MgCO_3$ as reference standard.

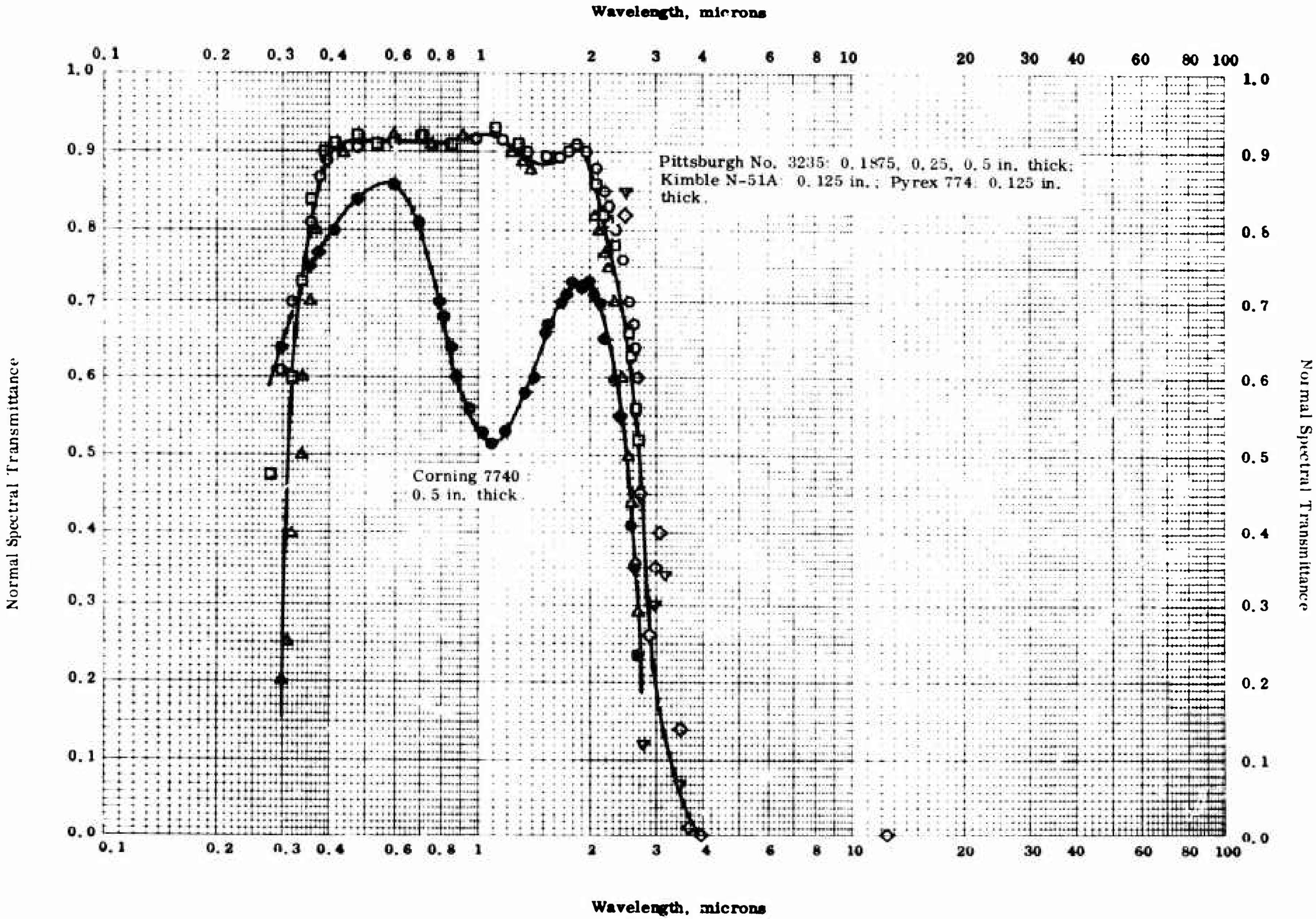


NORMAL TOTAL TRANSMITTANCE -- BOROSILICATE GLASS

NORMAL TOTAL TRANSMITTANCE -- BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-15	589-733		Borosilicate glass. Pittsburgh No. 3235; 0.1875 in. thickness.	Reasonably flat parallel slab.
□	59-15	589-733		Same as above; 0.25 in. thickness.	Reasonably flat parallel slab.
△	59-15	583-733		Same as above; 0.5 in. thickness.	Reasonably flat parallel slab.
◇	59-15	533-922		Corning 7740; 0.5 in. thickness.	Reasonably flat parallel slab.



NORMAL SPECTRAL TRANSMITTANCE -- BOROSILICATE GLASS

NORMAL SPECTRAL TRANSMITTANCE -- BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range μ	Rept. Error %	Sample Specifications	Remarks
○	59-15	298	0.3-2.7		Borosilicate glass. Pittsburgh No. 3235, 0.1875 in. thickness.	Reasonably flat parallel slab; data taken from smooth curve.
□	59-15	298	0.28-2.7		Same as above; 0.25 in. thickness.	Same as above.
△	59-15	298	0.3-2.7		Same as above; 0.5 in. thickness.	Same as above.
◇	51-22	811	2.5-12.5		Kimble N-51A; 74.7 SiO_2, 9.6 B_2O_3, 6.9 ($Na_2O + K_2O$), 5.6 R_2O_3, 2.2 BaO, and 0.9 CaO; 0.125 in. thickness.	Data taken from smooth curve.
▽	51-22	811	2.5-12.5		Pyrex 774; 81 SiO_2, 13 B_2O_3, 3.8 ($Na_2O + K_2O$), and 2.2 R_2O_3; 0.125 in. thickness.	Same as above.
●	59-15	298	0.3-2.7		Corning 7740; 0.5 in. thickness.	Reasonably flat parallel slab; data taken from smooth curve.

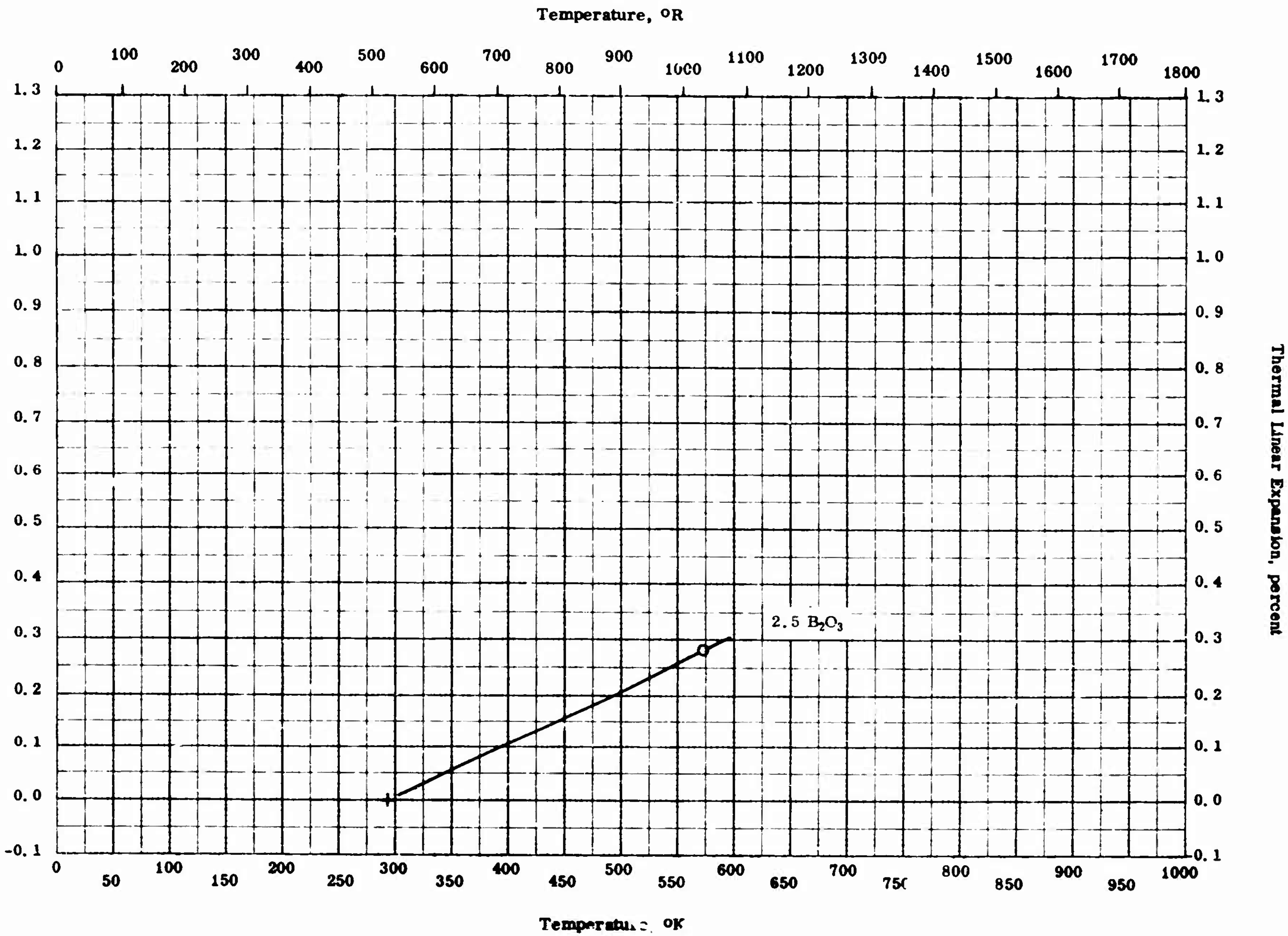
THERMAL LINEAR EXPANSION -- ALKALI AND ALKALINE EARTH ALUMINUM BOROSILICATE GLASS

	Material Composition							Average coefficient of linear expansion x 10^6	
Symbol	SiO_2	B_2O_3	Al_2O_3	Li_2O	K_2O	CaO	Na_2O	273-573 K	492-1032 R
o	49.5	20.8	9.0	10.1	10.6			9.1	5.1
	46.2	19.4	8.4	6.3	19.7			10.0	5.6
	43.4	18.2	17.9	2.9	27.8			10.8	6.0
	40.7	17.1	7.4		34.8			11.7	6.5
	50.2	14.9	18.3	10.3		6.3		7.2	4.0
	48.8	14.4	17.7	6.7		12.4		6.7	3.7
	47.5	14.0	17.2	3.4		18.0		6.1	3.4
	46.2	13.6	16.8			23.4		5.5	3.1
	51.4	21.6	9.3	10.5			7.2	9.7	5.4
	49.6	20.8	9.0	6.7			13.9	10.4	5.8
	47.9	20.8	8.7	3.2			20.2	11.0	6.1
	46.2	19.4	8.4				26.0	11.5	6.4

THERMAL LINEAR EXPANSION -- ALKALI AND ALKALINE EARTH ALUMINUM BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	51-31	273-573		Series of glasses.	

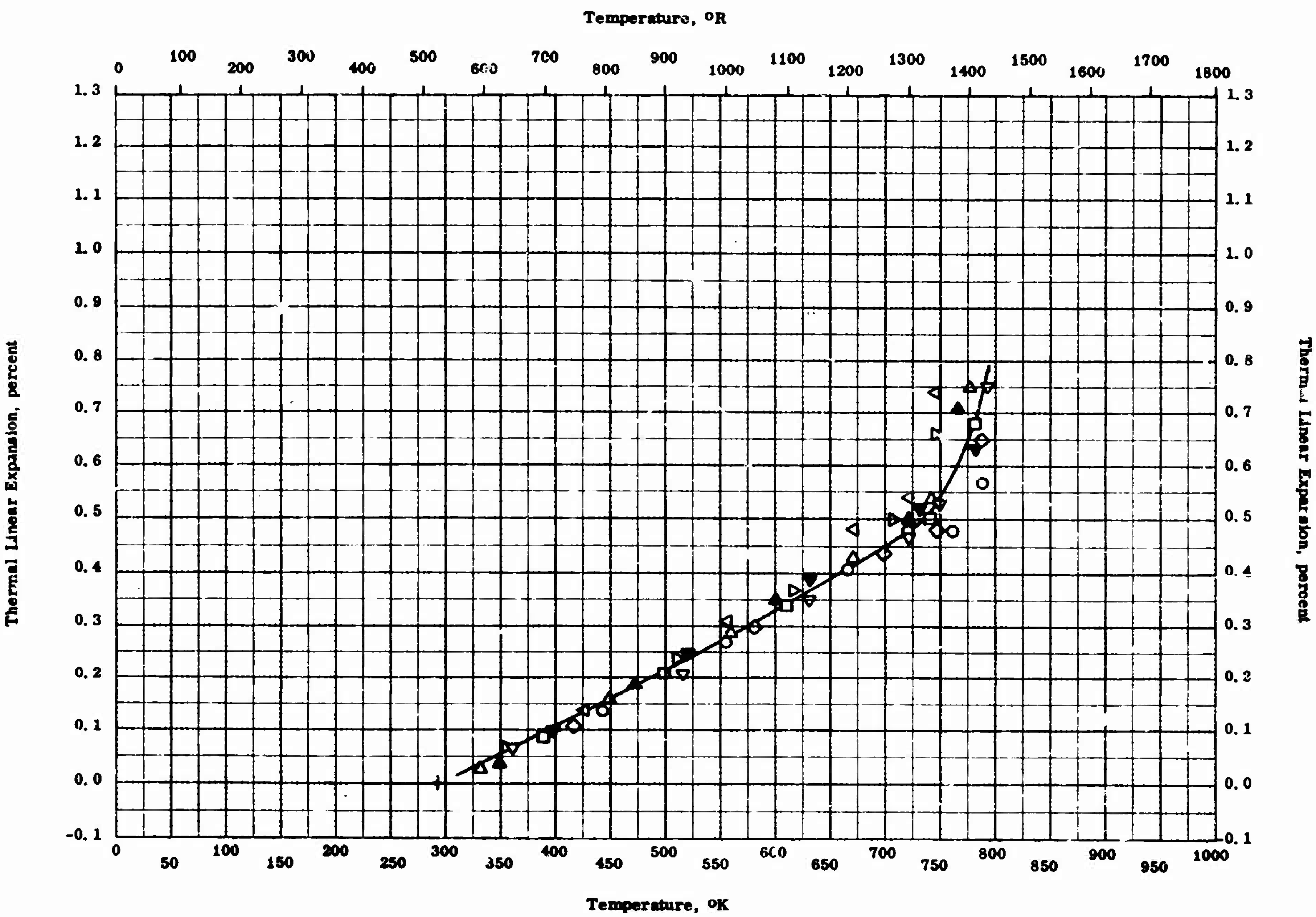


THERMAL LINEAR EXPANSION -- LEAD BOROSILICATE GLASS

THERMAL LINEAR EXPANSION -- LEAD BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-39	293-573		78.5 PbO, 19.0 SiO_2, and 2.5 B_2O_3; density 381 lb ft^{-3}.	Corresponding to 50 mole % PbO, 45 mole % SiO_2, and 5 mole % B_2O_3.

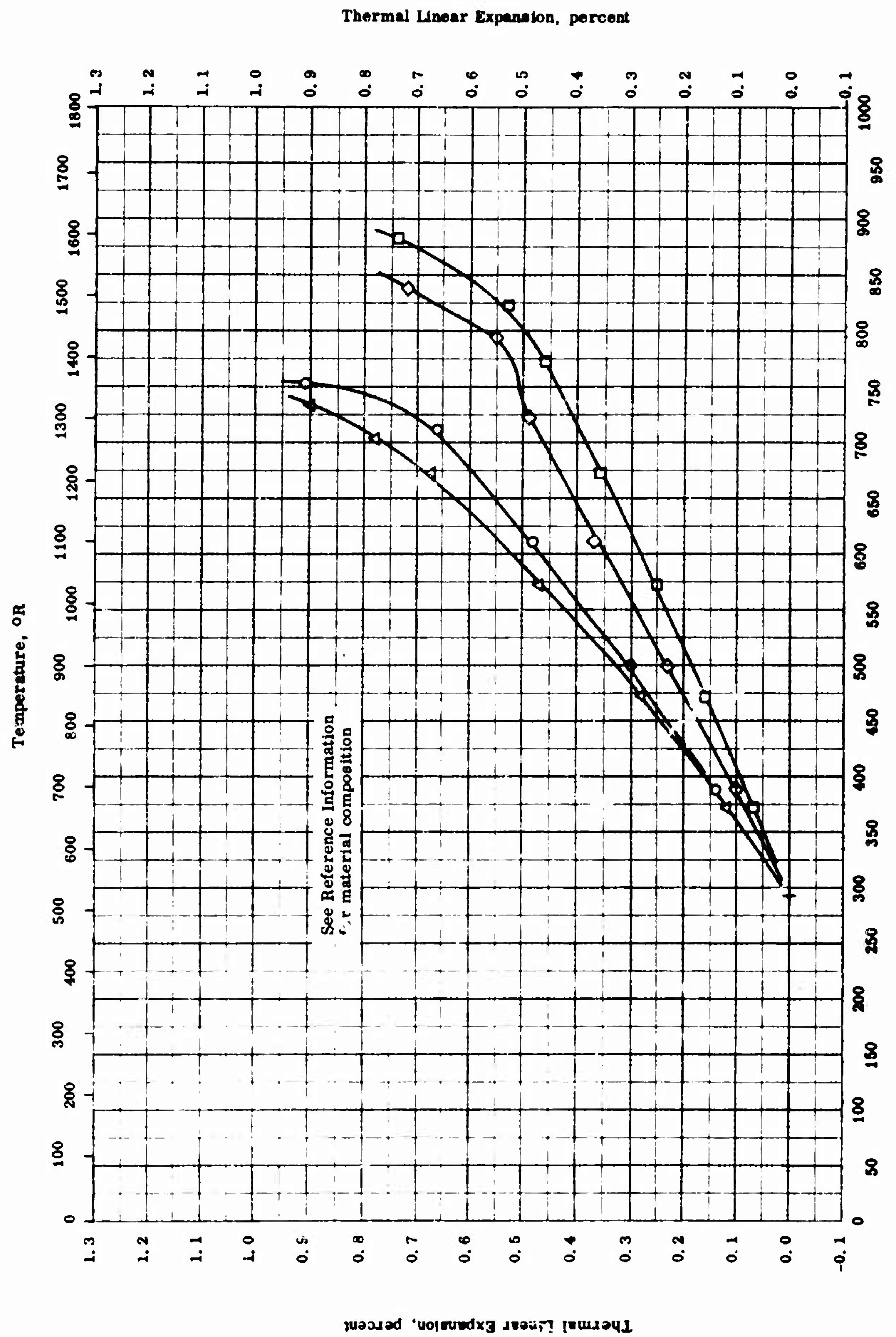


THERMAL LINEAR EXPANSION -- LITHIUM BOROSILICATE GLASS

THERMAL LINEAR EXPANSION -- LITHIUM BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-42	293-789		70.37 SiO_2, 16.95 Li_2O, 10.85 B_2O_3, and 0.40 oxides of the form R_2O_3.	Made from chemically pure materia[illegible] [illegible]elted and crushed 3 times, cast in 300 C mold, annealed 4 hrs at 300 C and furnace-cooled.
□	54-42	293-783		65.80 SiO_2, 17.13 Li_2O, 15.54 B_2O_3, and 0.33 oxides of the form R_2O_3.	Same as above.
△	54-42	293-778		60.75 SiO_2, 20.23 B_2O_3, 17.58 Li_2O, and 0.30 oxides of the form R_2O_3.	Same as above.
◇	54-42	293-789		55.54 SiO_2, 25.55 B_2O_3, 17.31 Li_2O, and 0.26 oxides of the form R_2O_3.	Same as above.
▽	54-42	293-795		51.35 SiO_2, 29.58 B_2O_3, 17.95 Li_2O, and 0.29 oxides of the form R_2O_3.	Same as above.
▷	54-42	293-748		61.28 SiO_2, 21.39 Li_2O, 16.03 B_2O_3, and 0.30 oxides of the form R_2O_3.	Same as above.
◁	54-42	293-748		55.73 SiO_2, 22.09 Li_2O, 20.69 B_2O_3, and 0.32 oxides of the form R_2O_3.	Same as above.
▲	54-42	293-766		50.75 SiO_2, 25.50 B_2O_3, 21.71 Li_2O, and 0.39 oxides of the form R_2O_3.	Same as above.
▼	54-42	293-783		65.55 SiO_2, 19.51 CaO, 13.36 Li_2O, and 1.05 B_2O_3, 0.28 oxides of the form R_2O_3.	Same as above.

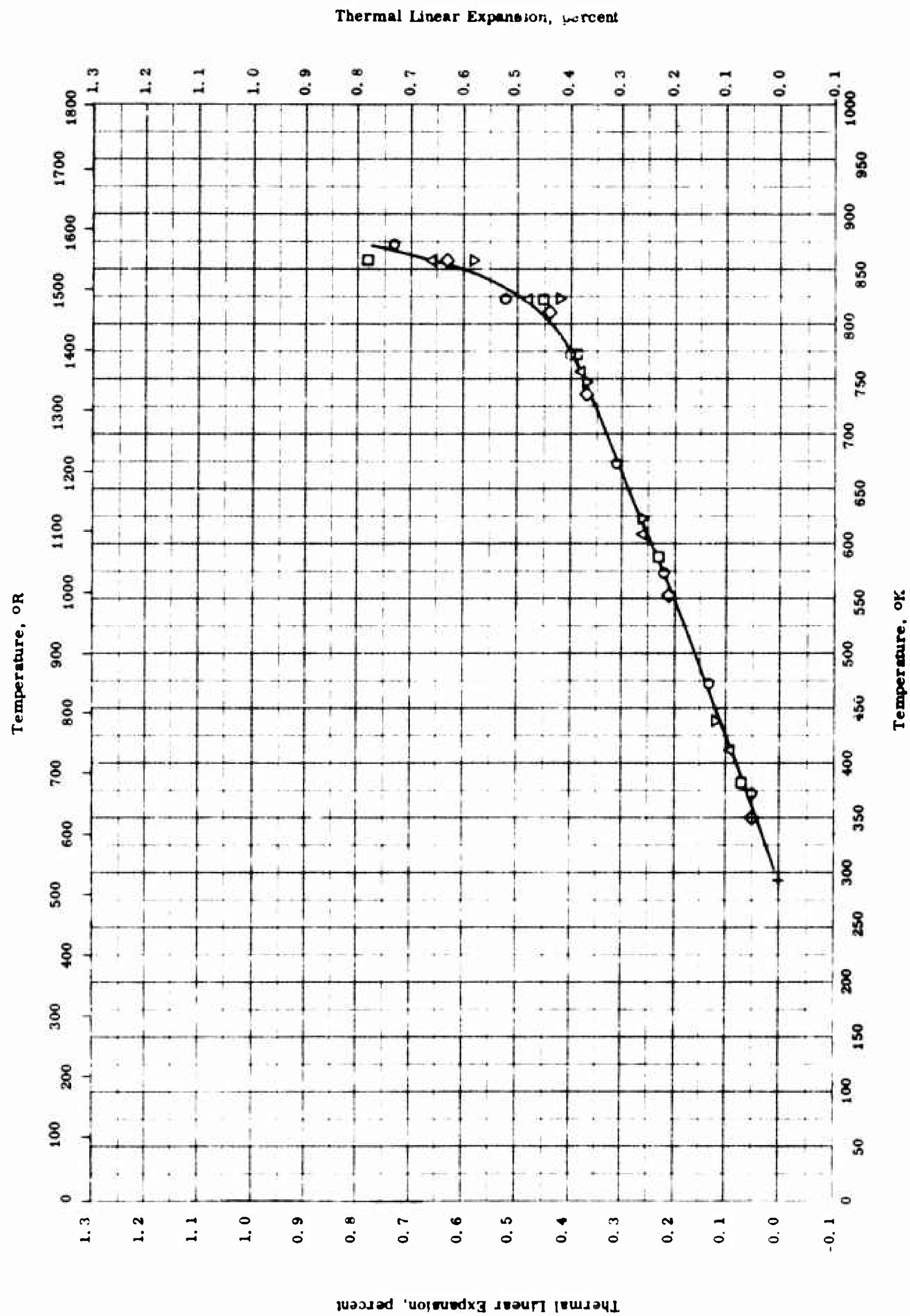


THERMAL LINEAR EXPANSION -- SODIUM BOROSILICATE GLASS

THERMAL LINEAR EXPANSION -- SODIUM BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-42	293-753		57.83 SiO_2, 32.32 Na_2O, 8.50 B_2O_3, and 0.25 metal oxides of the form R_2O_3.	Made from chemically pure materials melted and crushed 3 times, cast in 300 C mold and annealed 4 hrs at 300 C, and furnace cooled.
□	54-42	293-883		71.15 SiO_2, 17.28 Na_2O, 10.20 B_2O_3, and 0.35 metal oxides of the form R_2O_3.	Same as above.
△	54-42	293-733		51.72 SiO_2, 37.40 Na_2O, 8.61 B_2O_3, and 0.24 metal oxides of the form R_2O_3.	Same as above.
□	54-42	293-839		64.93 SiO_2, 22.85 Na_2O, 10.78 B_2O_3, and 0.27 metal oxides of the form R_2O_3.	Same as above.



THERMAL LINEAR EXPANSION -- SODIUM POTASSIUM BOROSILICATE GLASS

THERMAL LINEAR EXPANSION -- SODIUM POTASSIUM BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-23	293-873		Borosilicate Crown Glass; nominal: 70 SiO_2, 11 B_2O_3, 9 Na_2O, 7 K_2O, and 3 BaO.	
□	57-23	293-858		Same as above; density 157.8 lb ft^{-3}.	This sample and the following three were subjected to 4 different heat treatements which were not described.
△	57-23	293-858		Same as above except density 157.3 lb ft^{-3}.	
◇	57-23	293-858		Same as above except density 157.1 lb ft^{-3}.	
▽	57-23	293-858		Same as above except density 156.8 lb ft^{-3}.	

THERMAL LINEAR EXPANSION -- SODIUM ZINC BOROSILICATE GLASS

Symbol	Material Composition							Average coefficient of linear expansion x 10^6	
	SiO_2	B_2O_3	Na_2O	ZnO	Al_2O_3	CaO	K_2O	293-373 K	528-672 R
○	68.2	11.0	6.9	6.4	3.2	2.7	1.5	6.52	3.62
□	64.2	15.3	6.8	6.4	3.2	2.6	1.5	5.81	3.23
◇	62.2				14.6	23.2		5.4	3.00
△	60.0	19.6	6.8	6.4	3.2	2.6	1.5	6.1	3.39

THERMAL LINEAR EXPANSION -- SODIUM ZINC BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-37	293-373		68.2 SiO_2, 11.0 B_2O_3, 6.9 Na_2O, 6.4 ZnO, 3.2 Al_2O_3, 2.7 CaO, and 1.5 K_2O.	
□	56-37	293-373		64.2 SiO_2, 15.3 B_2O_3, 6.8 Na_2O, 6.4 ZnO, 3.2 Al_2O_3, 2.6 CaO, and 1.5 K_2O.	
◇	56-37	293-373		62.2 SiO_2, 23.2 CaO, and 14.6 Al_2O_3	
△	56-37	293-373		60.0 SiO_2, 19.6 B_2O_3, 6.8 Na_2O, 6.4 ZnO, 3.2 Al_2O_3, 2.6 CaO, and 1.5 K_2O.	

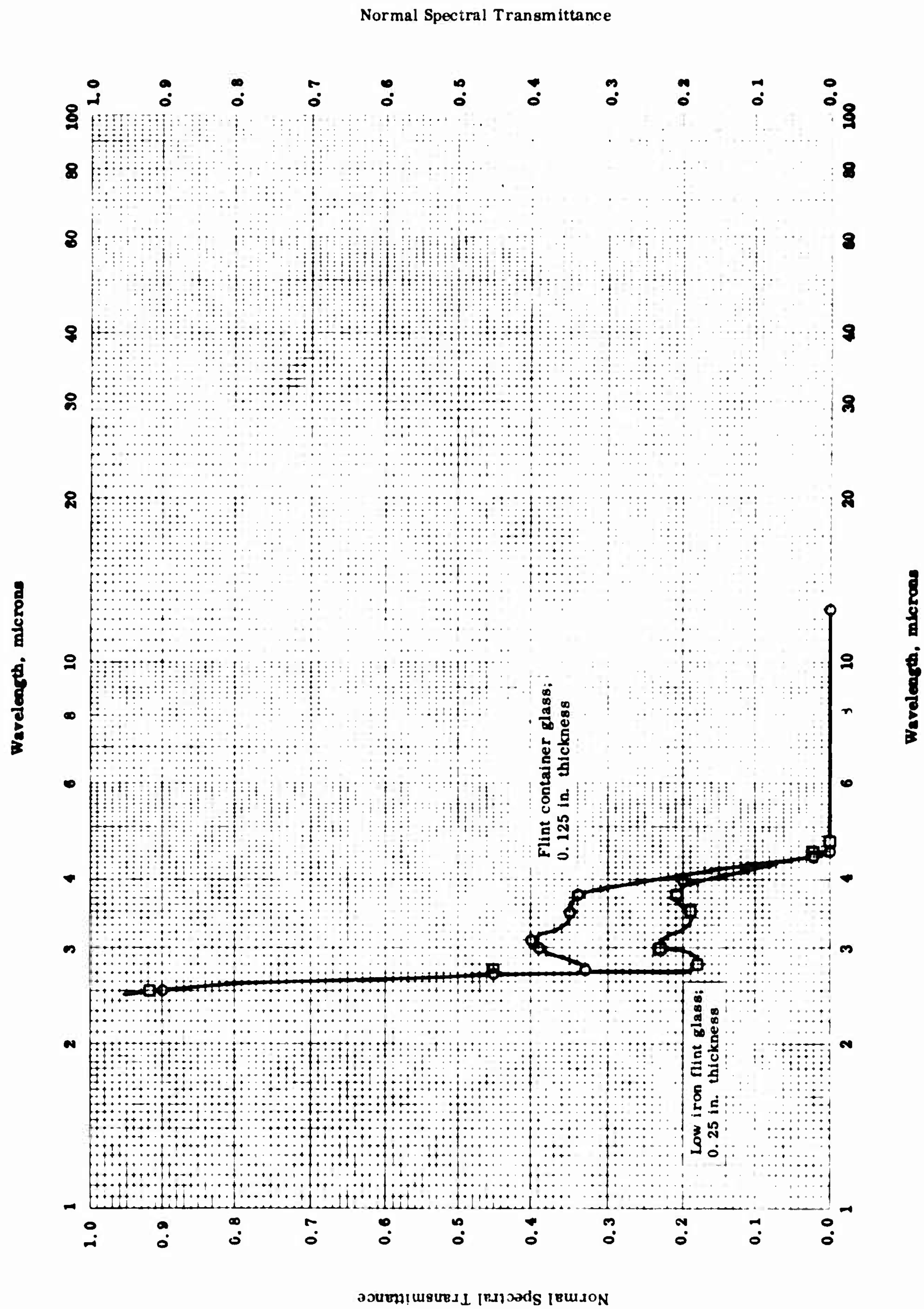
THERMAL LINEAR EXPANSION -- ZINC MAGNESIUM ALUMINUM BOROSILICATE GLASS

Symbol	Material Composition, Mole %						Average coefficient of linear expansion x 10^6	
	SiO_2	B_2O_3	MgO	Al_2O_3	ZnO	Others	373-673 K	672-1212 K
○	42.9	13	21.5	21.5		1.1 Na_2O	4.3	2.4
	40	10	26	14	6	4 Li_2O	5.9	3.3
	40	10	26.6	16.7		6.7 CaO	4.7	2.6
	40	10	20	16	6	4 each SrO, Li_2O	5.6	3.1
	40	10	23	17	10		4.6	2.6
	40	10	24	16	6	4 SrO	5.6	3.1
	40	10	20	16	6	8 SrO	5.4	3.0
	26.5	24	10.7	10.7	27.5	0.5 Na_2O	4.8	2.7
	25	22.5	13.3	8.35	27.5	3.35 CaO	5.1	2.8
	25	22.5	13.3	8.4	30.8		5.2	2.9
	17	18	30		35		6.2	3.4
	17	18	30	5	30		6.6	3.7
	17	18	25	4	36		6.1	3.4
	17	18	25	4	34	2 ZrO	6.3	3.5
	10.5	36.9	10.5		31.6	10.5 Li_2O	7.9	4.4
	10	35	10		45		5.5	3.1
	10	35	10	5	40		5.4	3.0

THERMAL LINEAR EXPANSION -- ZINC MAGNESIUM ALUMINUM BOROSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-43	373-673		Series of glasses.	

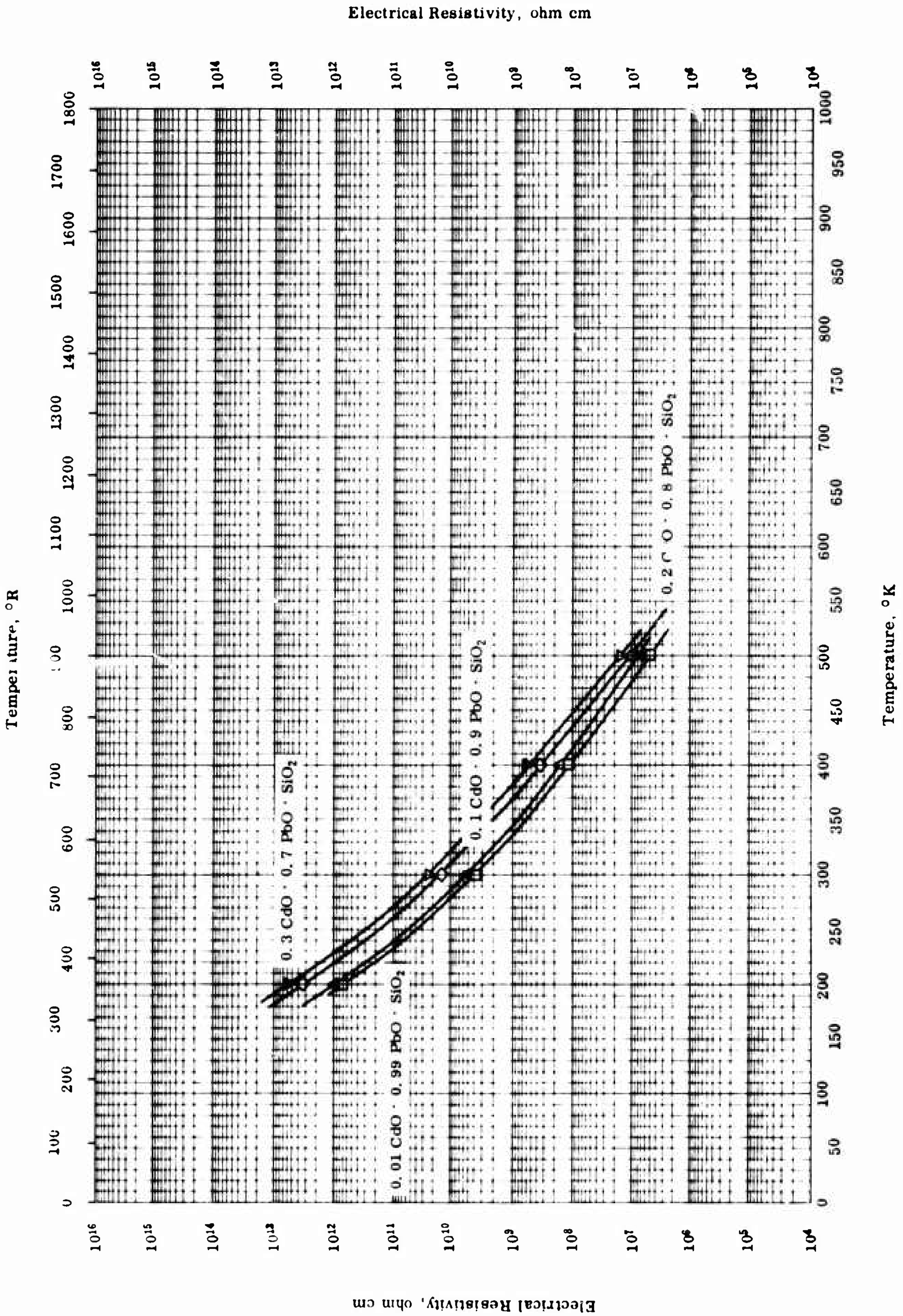


NORMAL SPECTRAL TRANSMITTANCE -- CALCIUM SILICATE GLASS

NORMAL SPECTRAL TRANSMITTANCE -- CALCIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	51-22	811	2.5-12.5		Flint container glass; 71.7 SiO_2, 13.3 ($Na_2O + K_2O$), 11.9 CaO, 1.8 R_2O_3, 0.6 BaO and 0.3 MgO; 0.125 in. thickness.	Data taken from smooth curve.
□	51-22	811	2.5-12.5		Low iron flint glass; 72.2 SiO_2, 13 ($Na_2O + K_2O$), 12.7 CaO, 1.1 R_2O_3, and 0.2 MgO; 0.25 in. thickness.	Same as above.

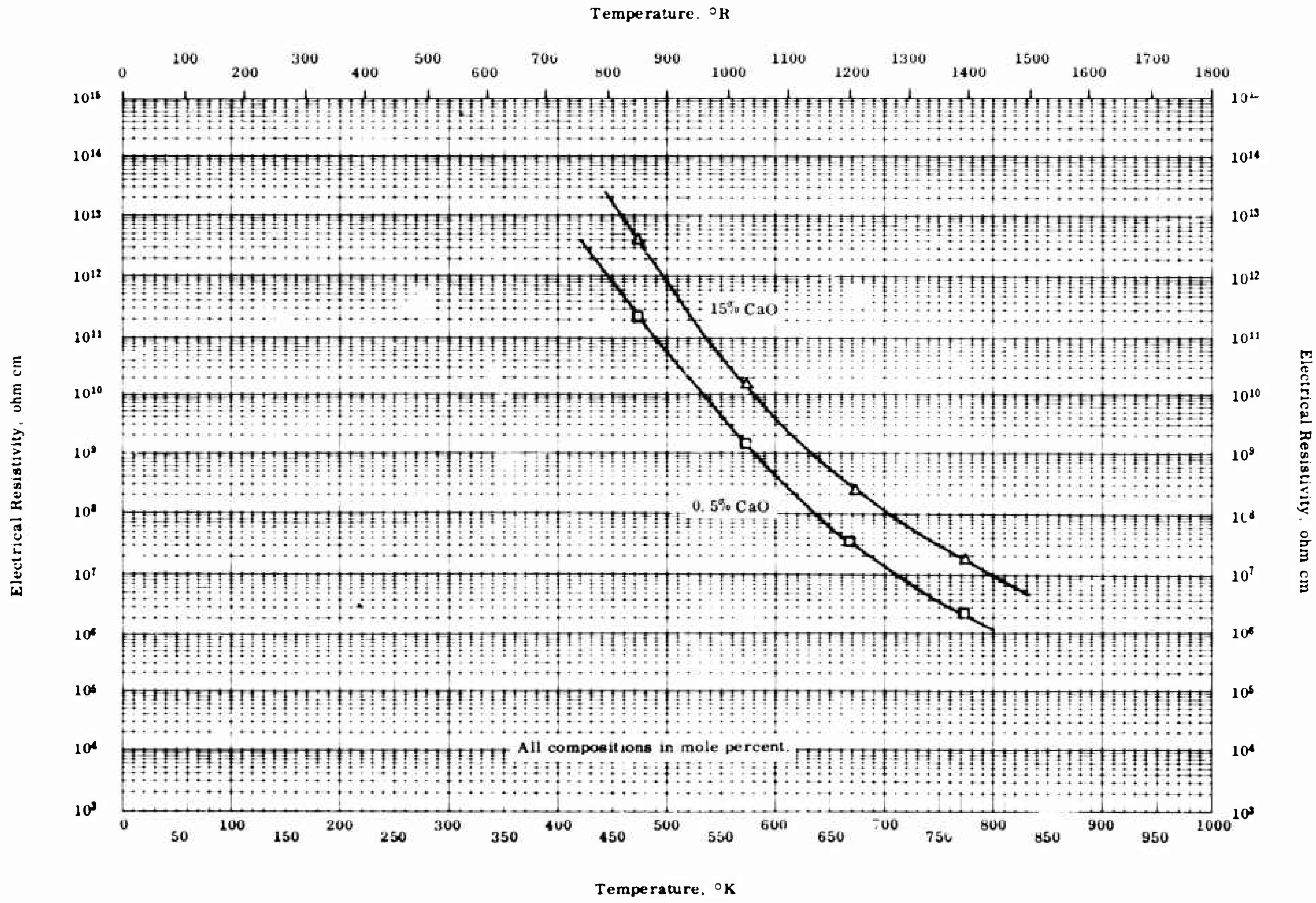


ELECTRICAL RESISTIVITY -- CADMIUM LEAD SILICATE GLASS

ELECTRICAL RESISTIVITY -- CADMIUM LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	53-24	200-500		0.01 CdO · 0.99 PbO · SiO_2.	
△	53-24	200-500		0.1 CdO · 0.9 PbO · SiO_2.	
◇	53-24	200-500		0.2 CdO · 0.8 PbO · SiO_2.	
▽	53-24	200-500		0.3 CdO · 0.7 PbO · SiO_2.	

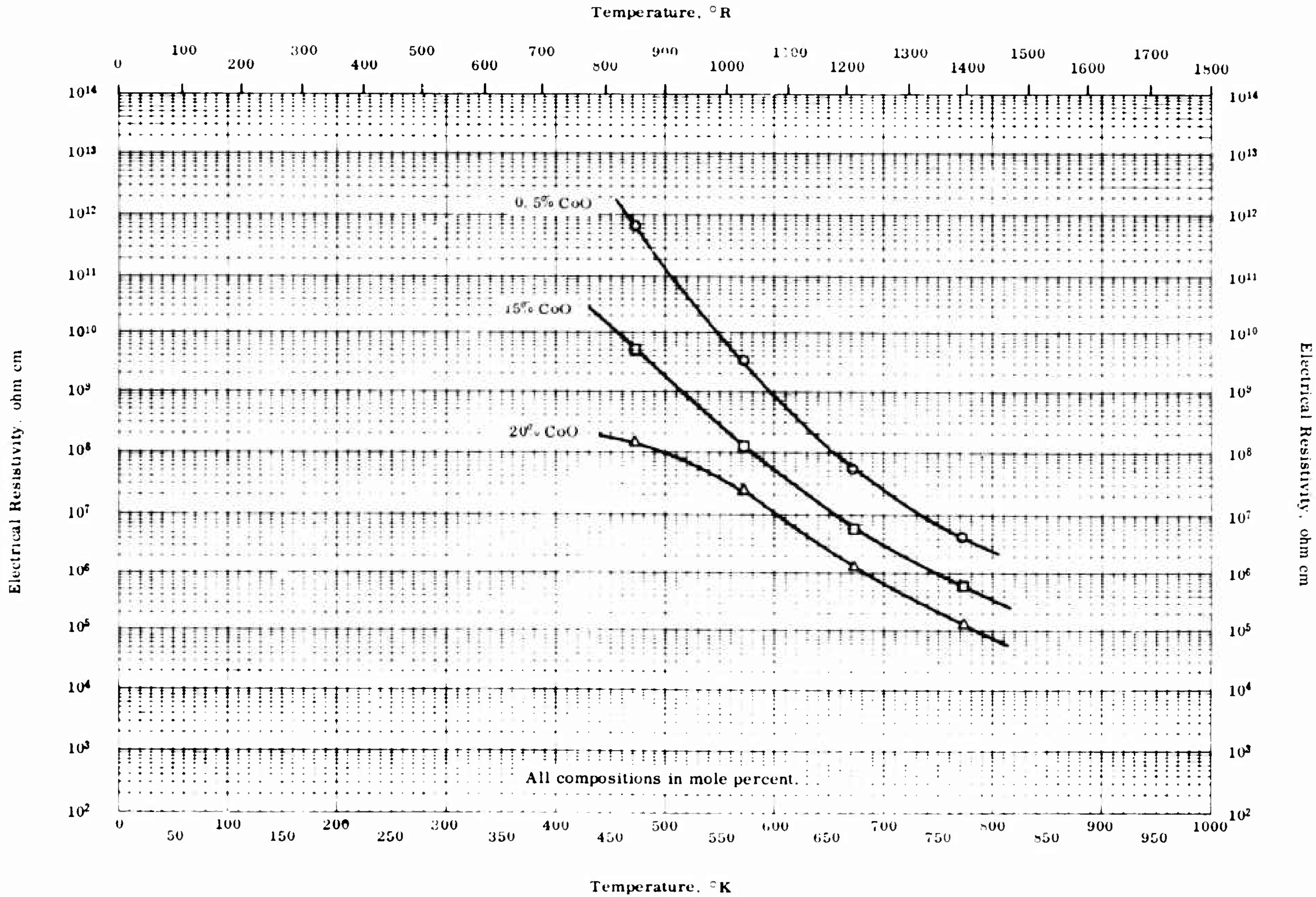


ELECTRICAL RESISTIVITY -- CALCIUM LEAD SILICATE GLASS

ELECTRICAL RESISTIVITY -- CALCIUM LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	53-24 also 56-12	473-773		50.0% SiO_2, 49.5% PbO and 0.5% CaO (Mole %).	Ground from reagent grade materials, melted, cast, annealed overnight, ground flat; heated at 10 C/min.
△	53-24 also 56-12	473-773		50.0% SiO_2, 35% PbO, and 15% CaO (Mole %).	Same as above.

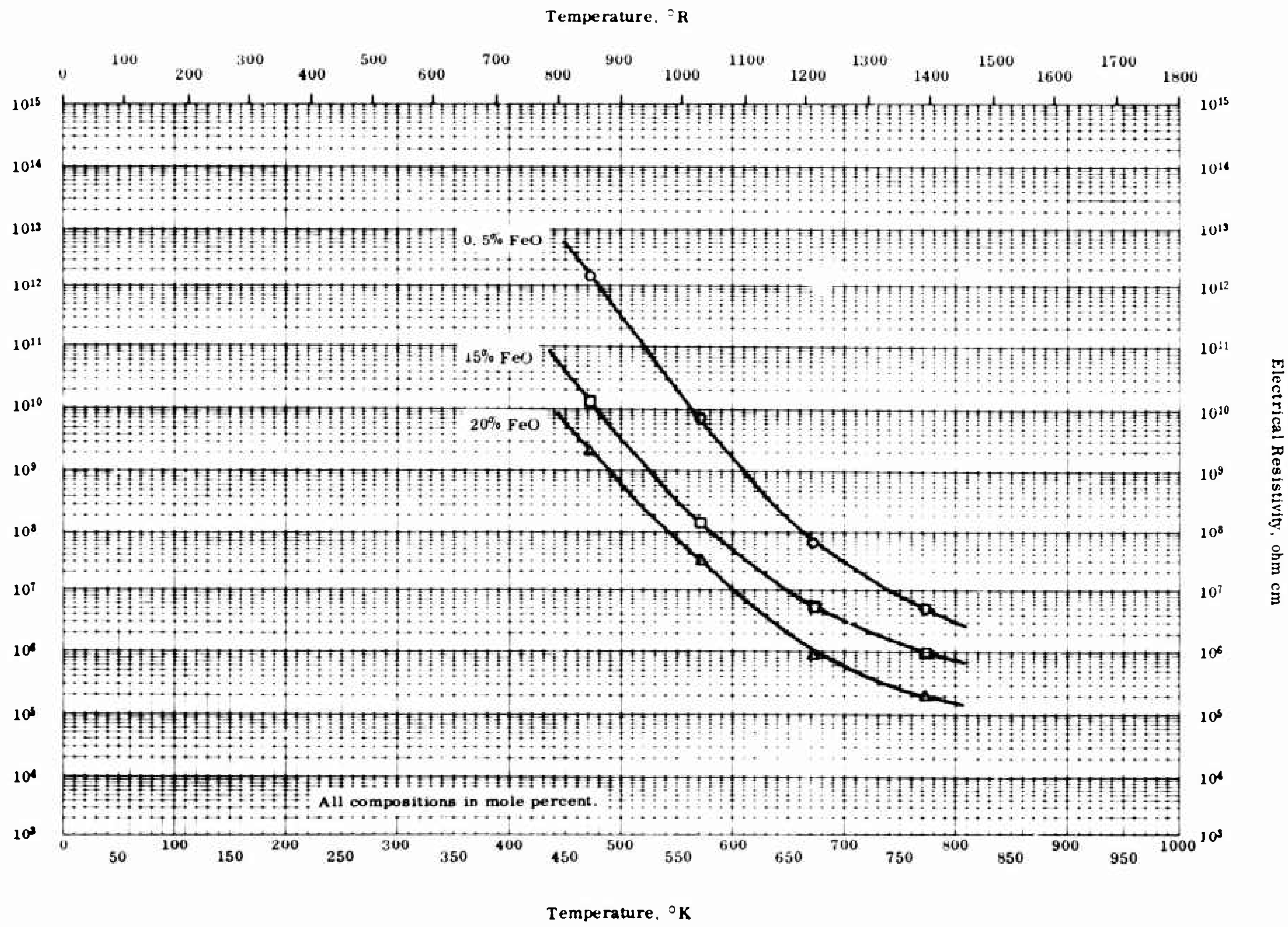


ELECTRICAL RESISTIVITY -- COBALT-LEAD SILICATE GLASS

ELECTRICAL RESISTIVITY -- COBALT-LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-25 also 56-12	473-773		50.0% SiO_2, 43.5% PbO, and 0.5% CoO (Mole %).	Ground from reagent grade materials, melted, cast, annealed overnight, ground flat; heated at 10 C/min.
□	54-25 also 56-12	473-773		50.0% SiO_2, 35% PbO, and 15% CoO (Mole %).	Same as above.
△	54-25 also 56-12	473-773		50.0% SiO_2, 30% PbO, and 20% CoO (Mole %).	Same as above.

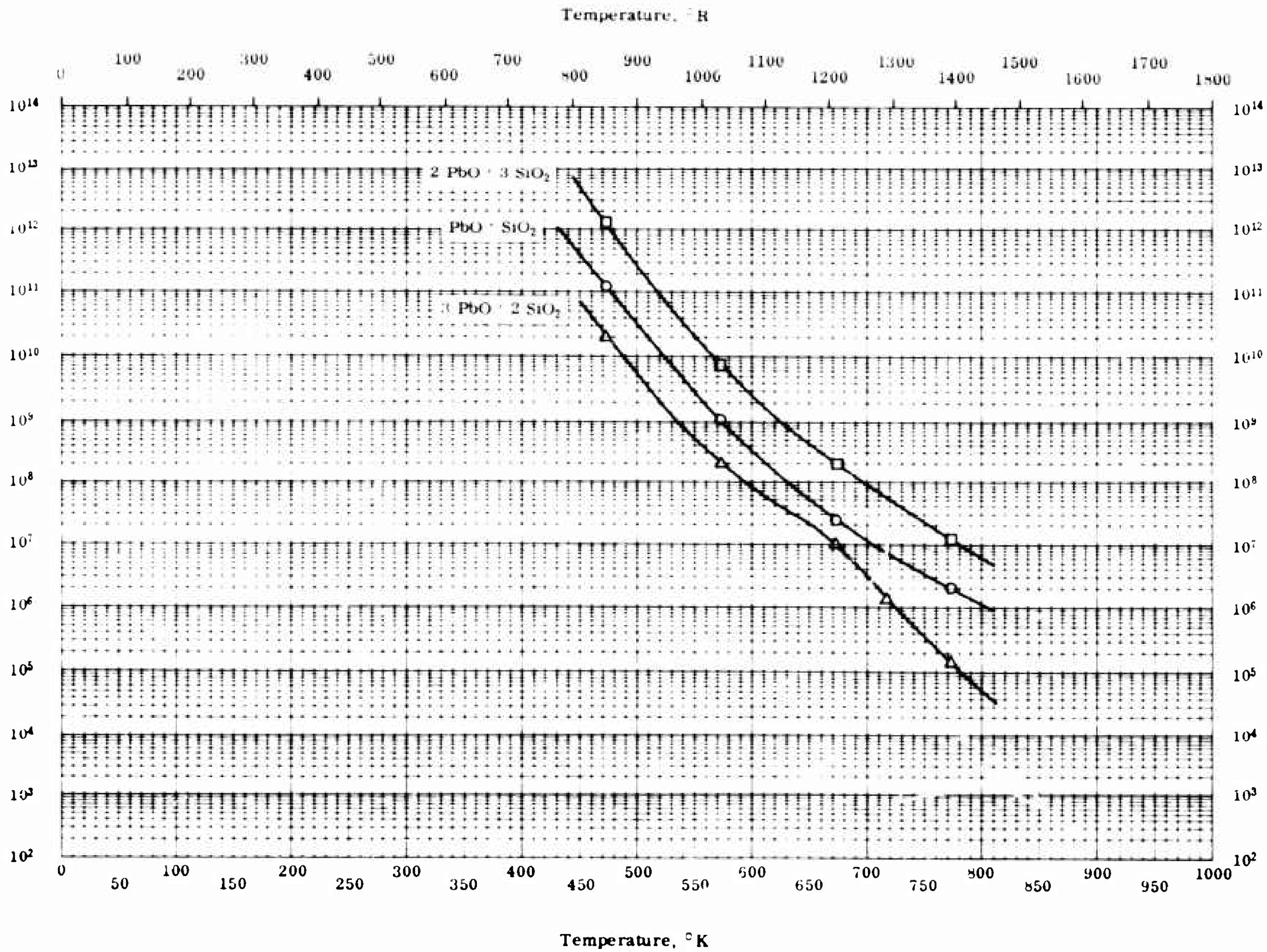


ELECTRICAL RESISTIVITY -- IRON LEAD SILICATE GLASS

ELECTRICAL RESISTIVITY -- IRON LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-12	473-773		50.0% SiO_2, 49.5% PbO, and 0.5% FeO (Mole %).	Ground from reagent grade materials, melted, cast, annealed overnight, ground flat; Heated at 10 C min^{-1}.
□	56-12	473-773		50.0% SiO_2, 35% PbO, and 15% FeO (Mole %).	Same as above.
△	56-12	473-773		50.0% SiO_2, 30% PbO, and 20% FeO (Mole %).	Same as above.

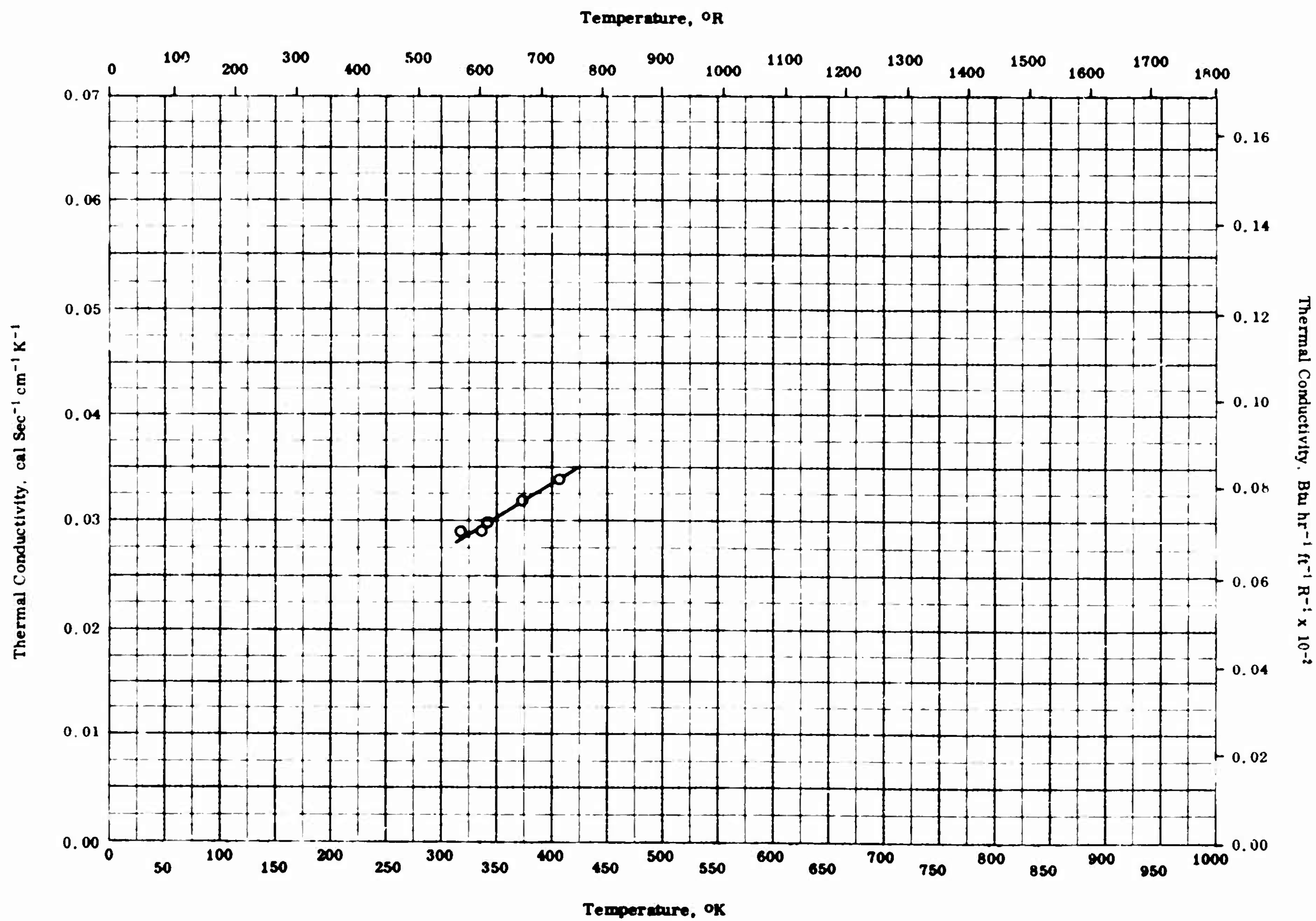


ELECTRICAL RESISTIVITY -- LEAD SILICATE GLASS

ELECTRICAL RESISTIVITY -- LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-18	473-773		PbO · SiO_2; high purity material.	
□	53-18	473-773		2 PbO · 3 SiO_2; same as above.	
△	53-18	473-773		3 PbO · 2 SiO_2; same as above.	

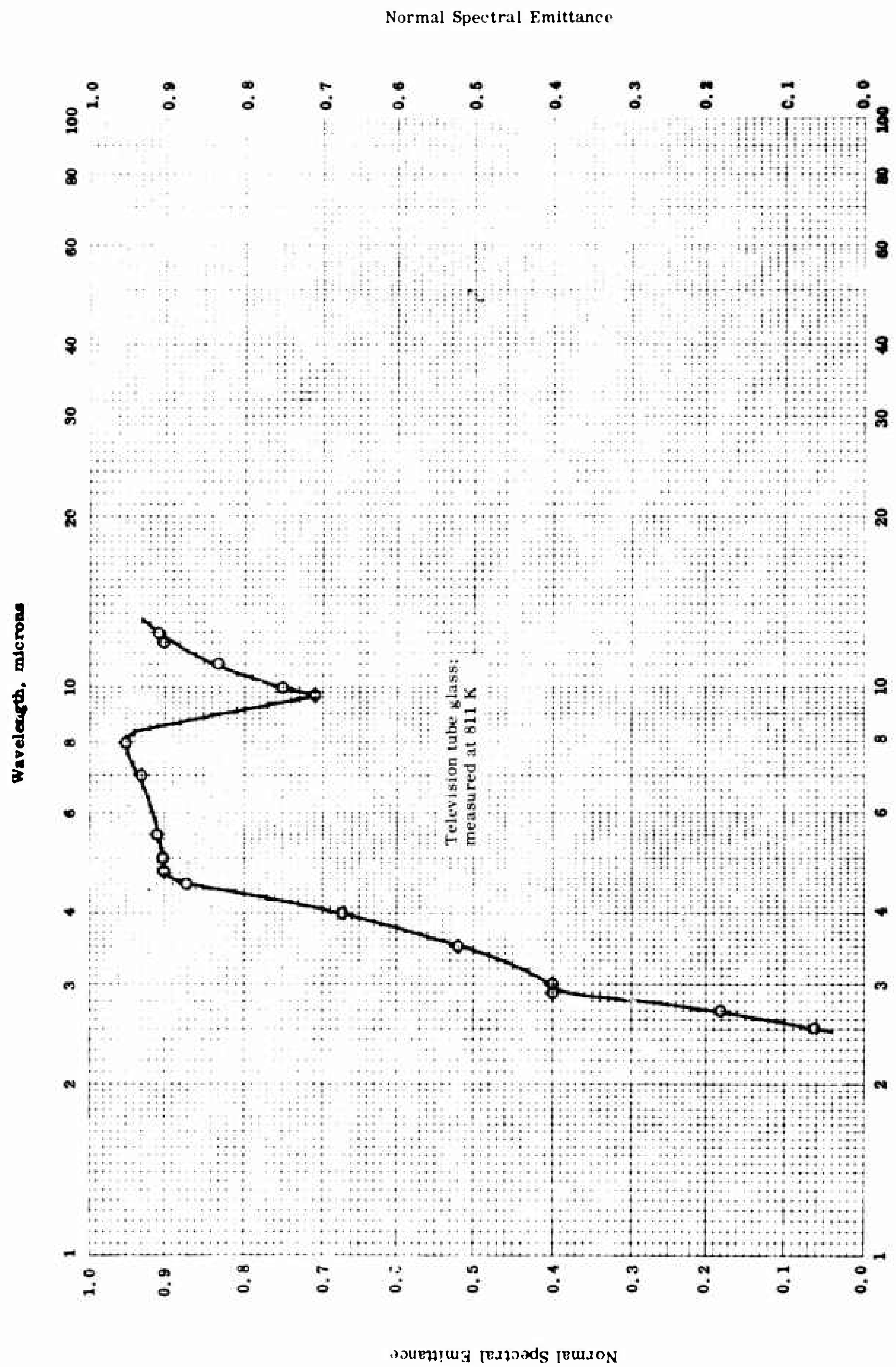


THERMAL CONDUCTIVITY -- LEAD SILICATE GLASS

THERMAL CONDUCTIVITY -- LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-3	317-411		Lead glass; American Ceramic Soc. standard glass; density 3.04 g cm^{-3}.	Pt alloy glaze for ceramic to metal bond.

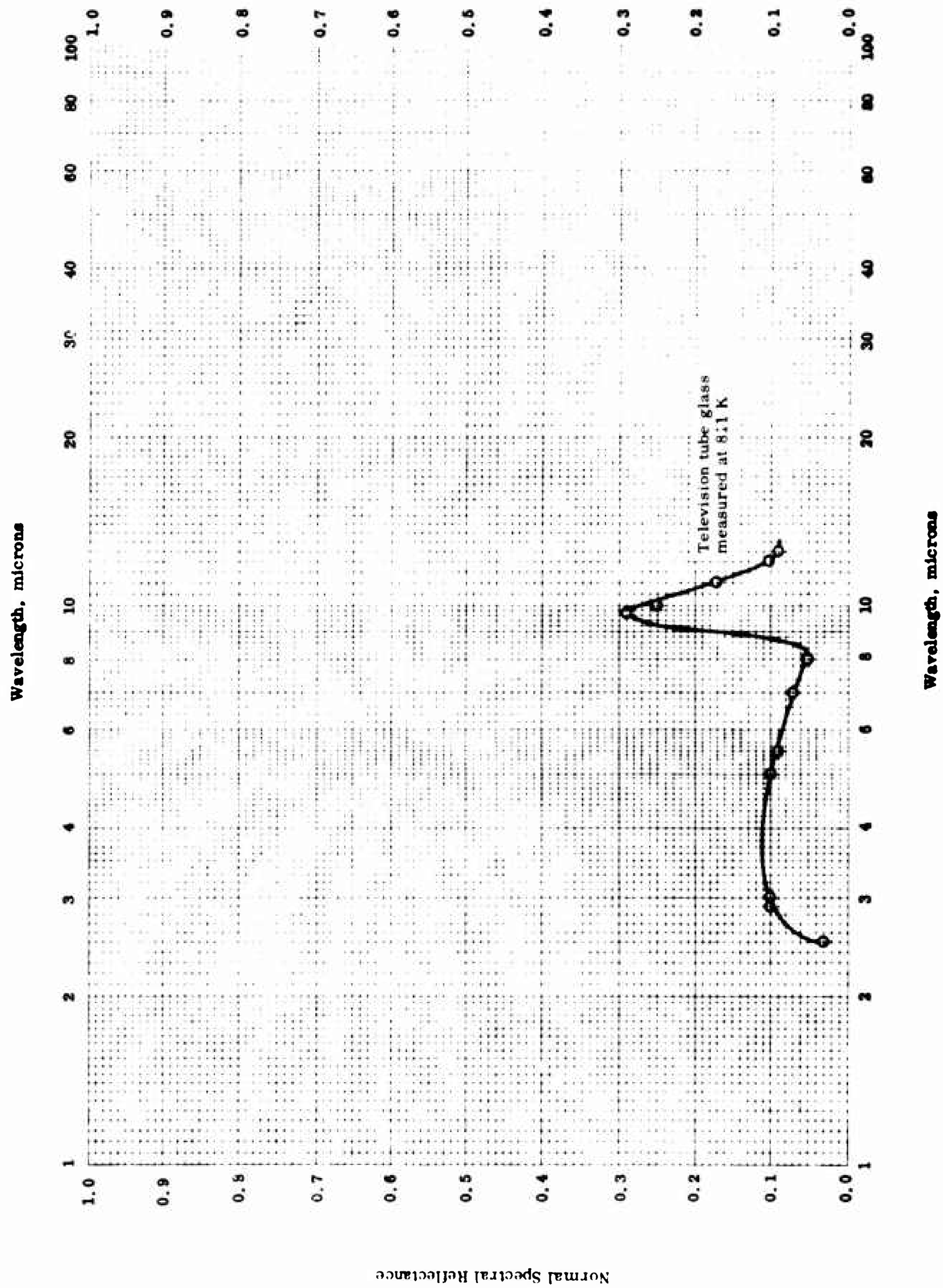


NORMAL SPECTRAL EMITTANCE -- LEAD SILICATE GLASS

NORMAL SPECTRAL EMITTANCE -- LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
o	51-22	811	2.5-12.5		Television tube glass; ~30 lead oxide; 0.125 in. thickness.	Data taken from smooth curve.

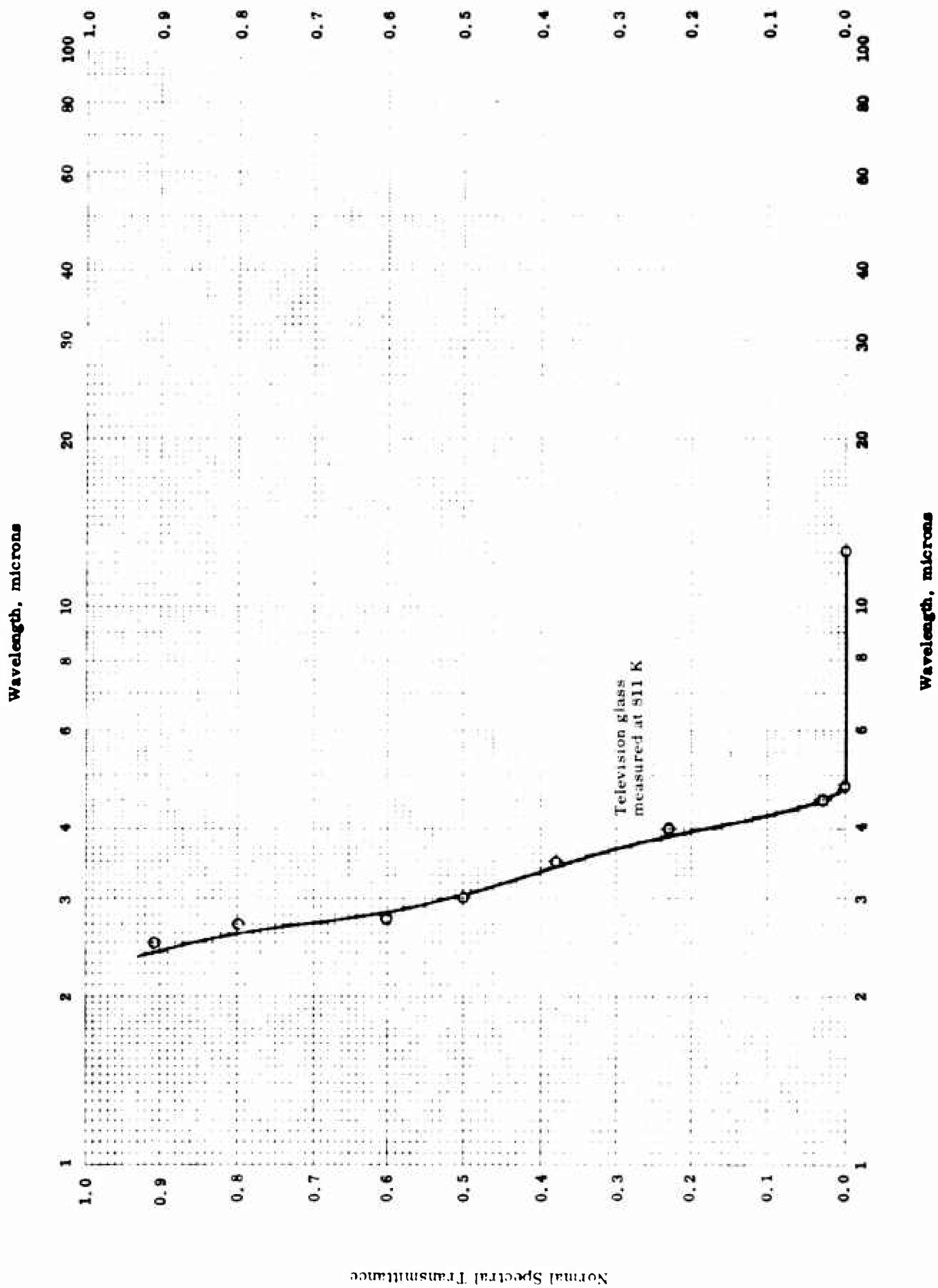


NORMAL SPECTRAL REFLECTANCE -- LEAD SILICATE GLASS

NORMAL SPECTRAL REFLECTANCE -- LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	51-22	811	2.5-12.5		Television tube glass; ~30 lead oxide; 0.125 in. thickness.	Data taken from smooth curve; calculated from transmittance and emittance.

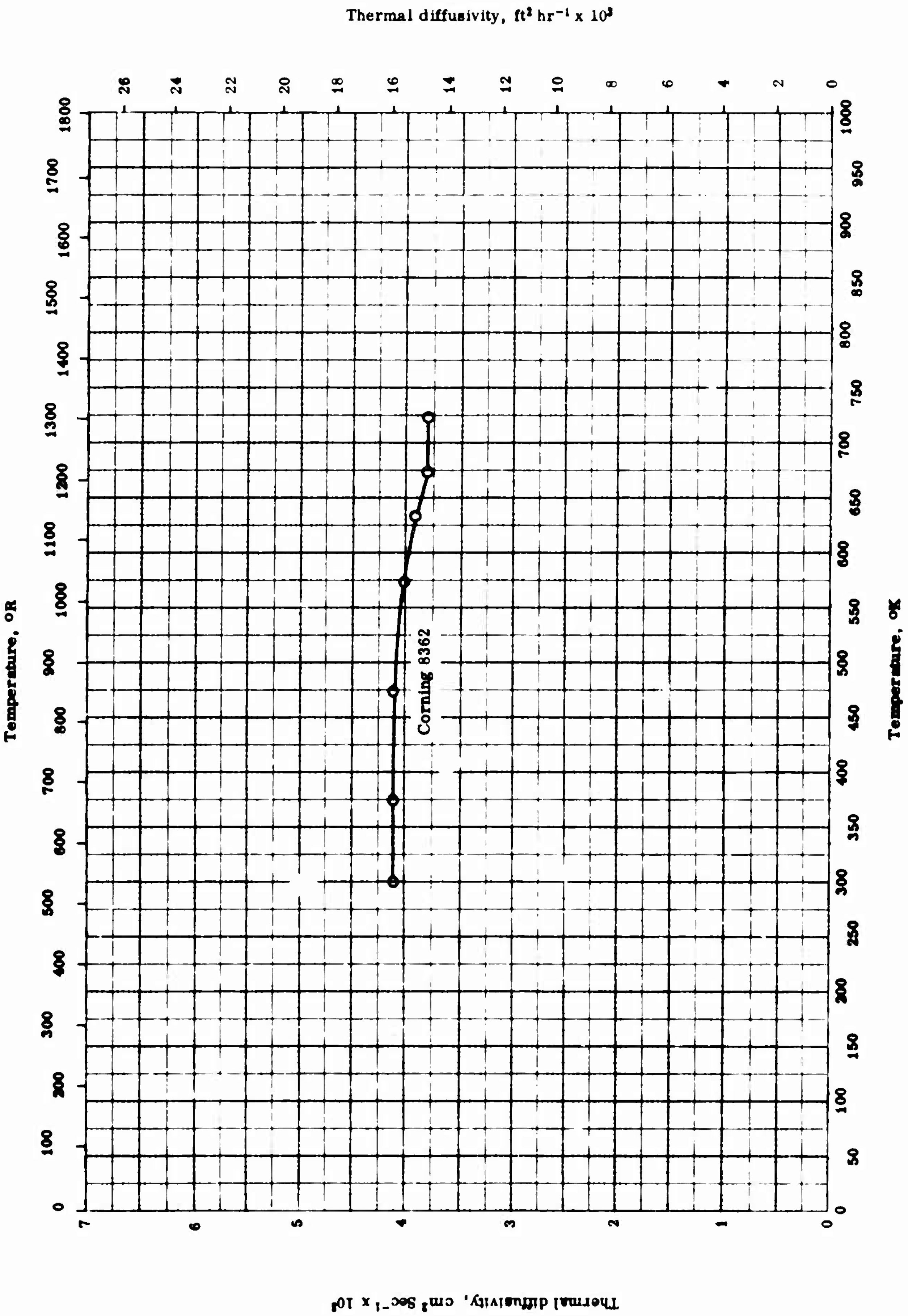


NORMAL SPECTRAL TRANSMITTANCE -- LEAD SILICATE GLASS

NORMAL SPECTRAL TRANSMITTANCE — LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	51-22	811	2.5-12.5		Television tube glass; ~ 30 lead oxide; 0.125 in. thickness.	Data taken from smooth curve.

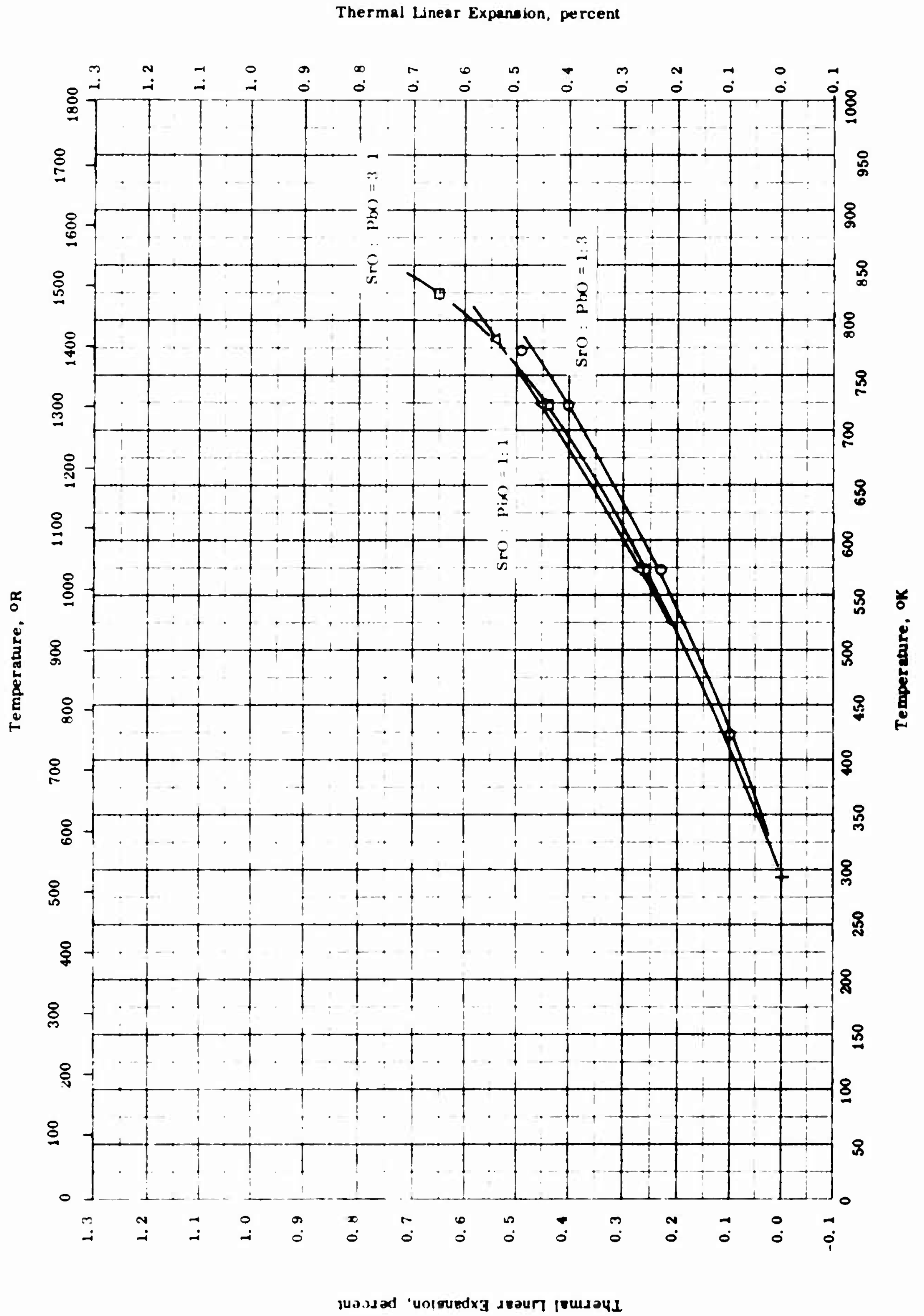


THERMAL DIFFUSIVITY -- LEAD POTASSIUM SILICATE GLASS
(Corning 8362)

THERMAL DIFFUSIVITY -- LEAD POTASSIUM SILICATE GLASS
(Corning 8362)

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	62-1	298-723	15	Corning glass 8362; 44.6 SiO_2, 33.4 PbO, 14.0 K_2O, 6.0 Na_2O, 2.0 Al_2O_3, and 1.3 CeO_2.	

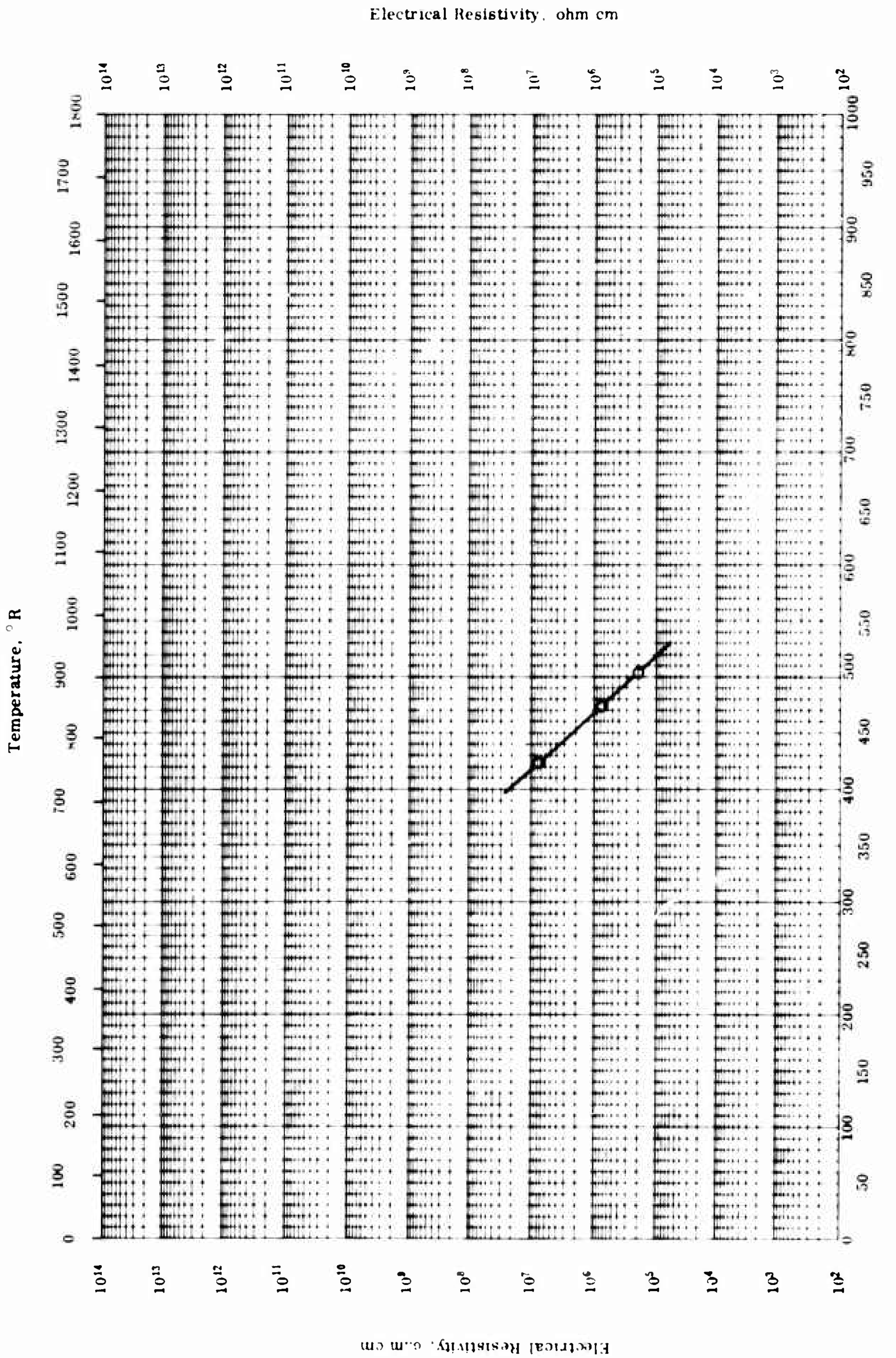


THERMAL LINEAR EXPANSION -- LEAD STRONTIUM SILICATE GLASS

THERMAL LINEAR EXPANSION -- LEAD STRONTIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-26	293-773		$Na_2O \cdot 0.25\ SrO \cdot 0.75\ PbO \cdot 5\ SiO_2$; 54.1 SiO_2, 30 PbO, 11.2 Na_2O, and 4.7 SrO.	Cast and annealed.
△	52-26	293-783		$Na_2O \cdot 0.5\ SrO \cdot 0.5\ PbO \cdot 5\ SiO_2$; 57.2 SiO_2, 21.2 PbO, 11.8 Na_2O, and 9.8 SrO.	Cast and annealed.
□	52-26	293-823		$Na_2O \cdot 0.75\ SrO \cdot 0.25\ PbO \cdot 5\ SiO_2$; 60.5 SiO_2, 15.7 SrO, 12.5 Na_2O, and 11.3 PbO.	Cast and annealed.

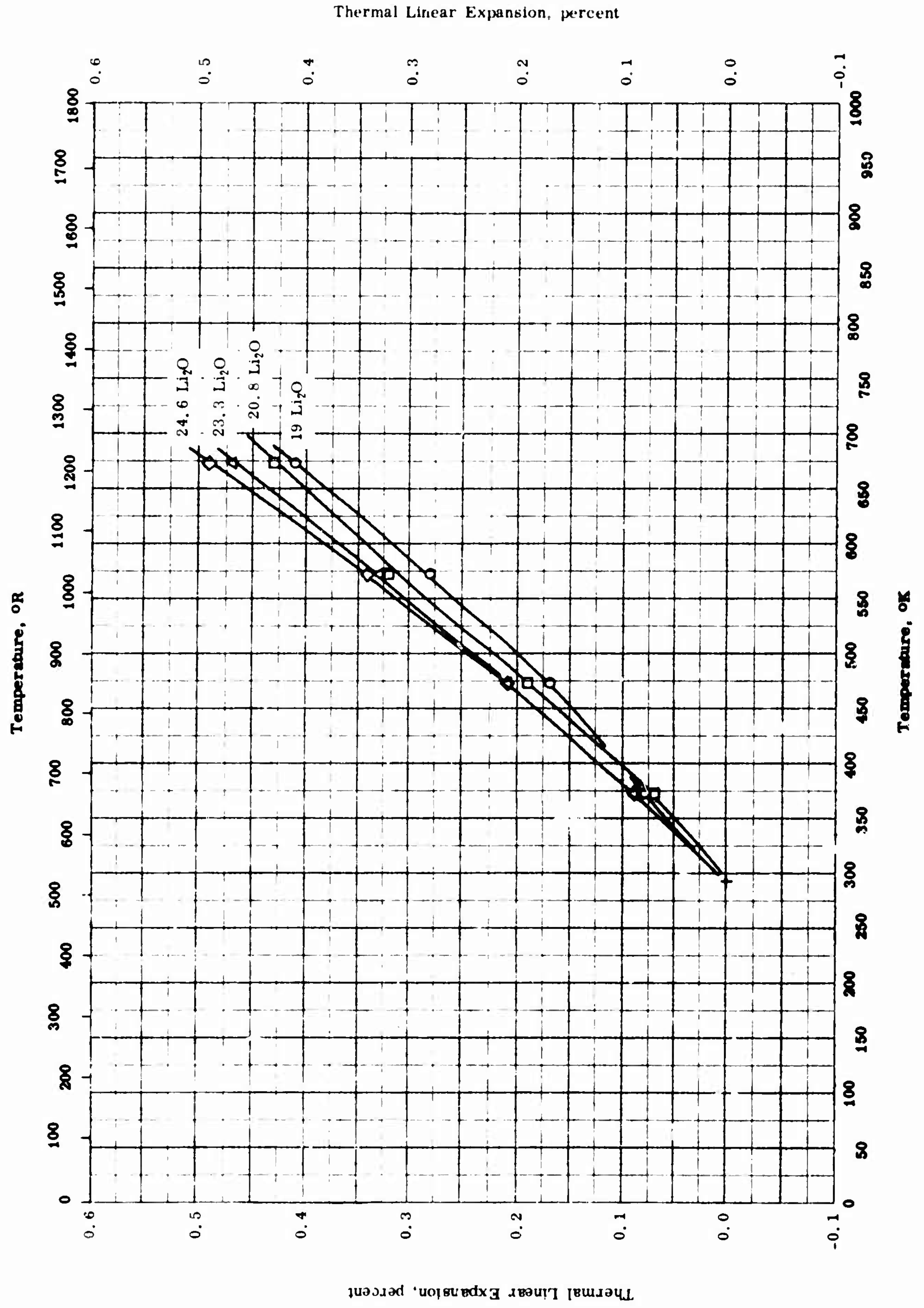


ELECTRICAL RESISTIVITY -- LITHIUM SILICATE GLASS

ELECTRICAL RESISTIVITY -- LITHIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	56-18	423-503		80.1 SiO_2 and 19.9 Li_2O, made from reagent grade materials.	

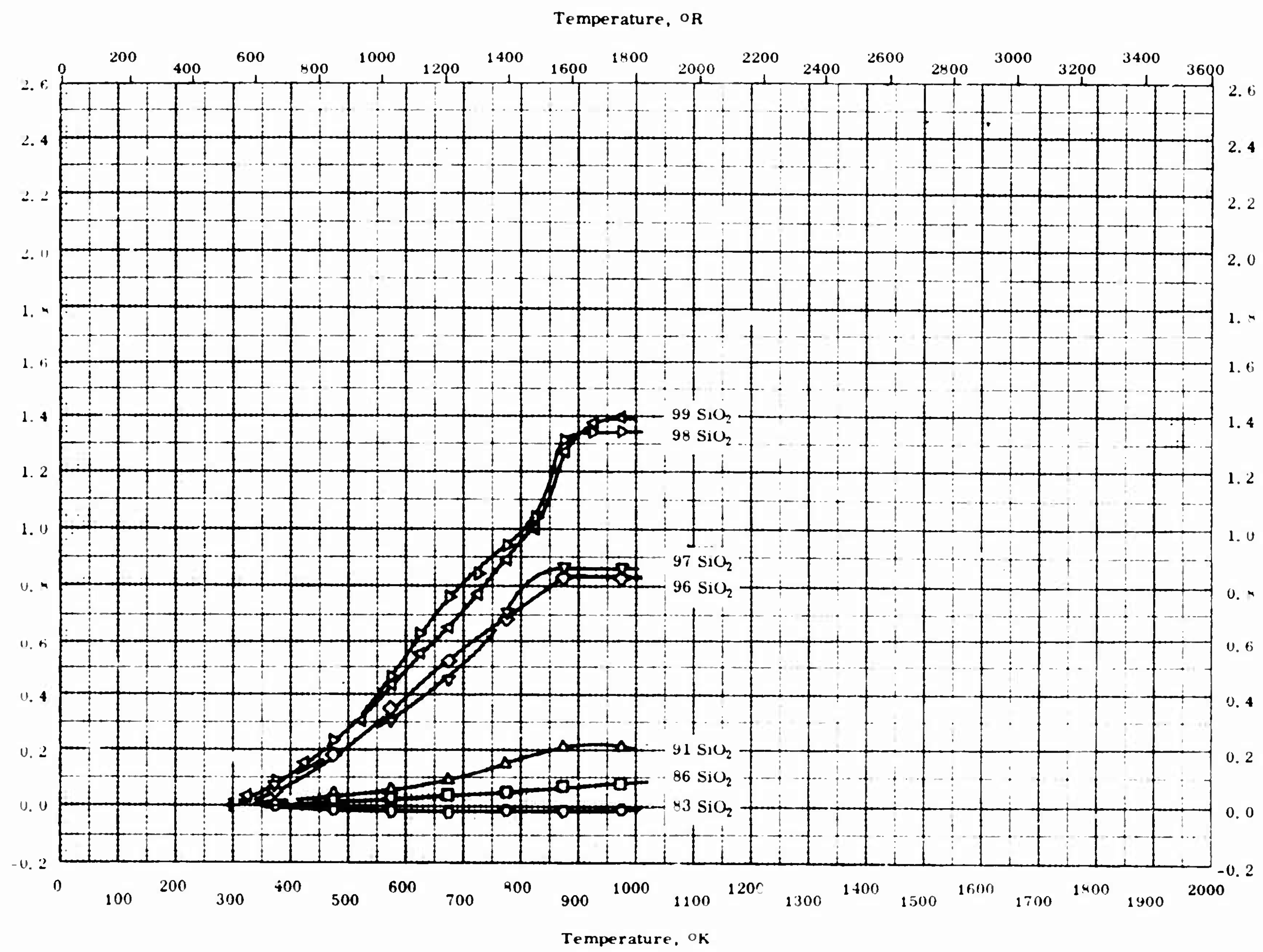


THERMAL LINEAR EXPANSION -- LITHIUM SILICATE GLASS

THERMAL LINEAR EXPANSION -- LITHIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-35	293-673		81 SiO_2 and 19 Li_2O; density 145.8 lb ft^{-3}.	
□	56-35	293-673		79.2 SiO_2 and 20.8 Li_2O; density 146.6 lb ft^{-3}.	
△	56-35	293-673		76.7 SiO_2 and 23.3 Li_2O; density 147.0 lb ft^{-3}.	
◇	56-35	293-673		75.4 SiO_2 and 24.6 Li_2O; density 146.9 lb ft^{-3}.	

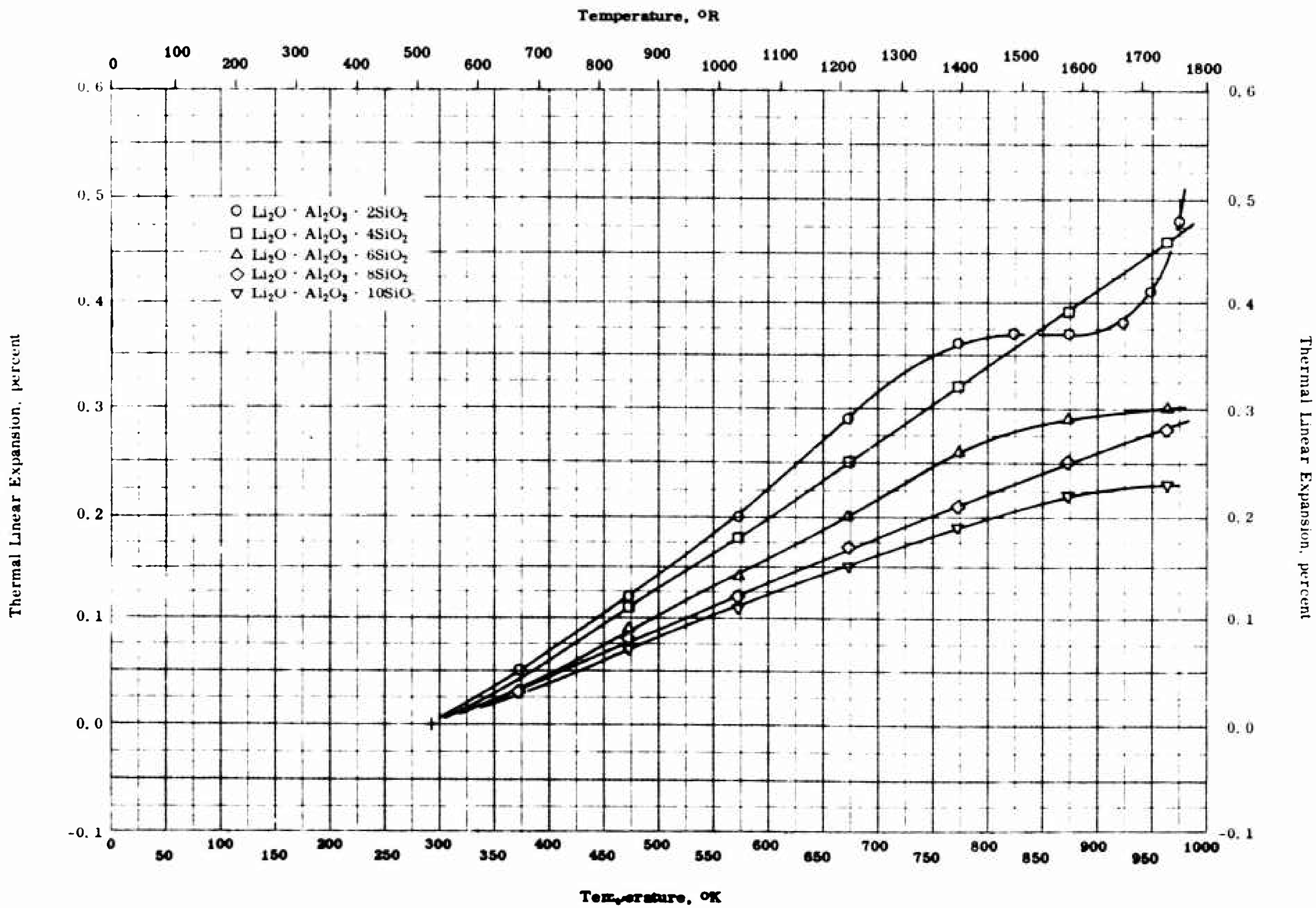


THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE GLASS

THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-34	293-973		83 SiO_2, 12 Al_2O_3, and 5 Li_2O; prepared from E. P. K., flint, and Li_2CO_3.	Fired to 2200 F in 5 hrs and soaked 1 hr.
□	54-34	293-973		86 SiO_2, 9 Al_2O_3, and 5 Li_2O; raw materials same as above.	Same as above.
△	54-34	293-973		91 SiO_2, 6 Al_2O_3, and 3 Li_2O; raw materials same as above.	Same as above.
◇	54-34	293-973		96 SiO_2, 3 Al_2O_3, and 1 Li_2O; raw materials same as above.	Same as above.
▽	54-34	293-973		97 SiO_2, 2.3 Al_2O_3, and 0.7 Li_2O; raw materials same as above.	Same as above.
▷	54-34	293-973		98 SiO_2, 1.5 Al_2O_3, and 0.5 Li_2O; raw materials same as above.	Same as above.
◁	54-34	293-973		99 SiO_2, 0.8 Al_2O_3, and 0.2 Li_2O; raw materials same as above.	Same as above.

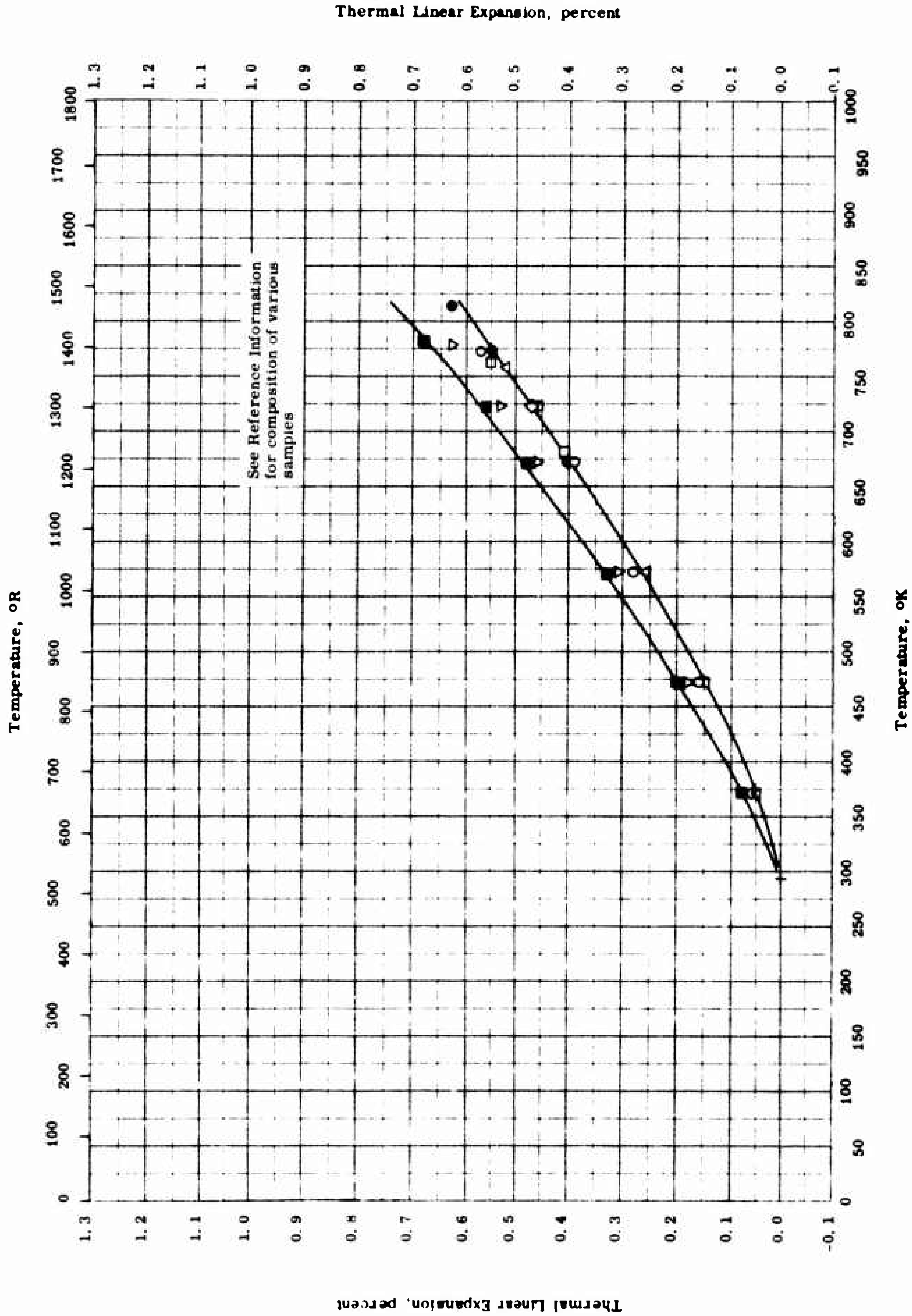


THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE GLASS

THERMAL LINEAR EXPANSION -- LITHIUM ALUMINUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	51-28	293-973		$Li_2O \cdot Al_2O_3 \cdot 2SiO_2$; nominal 47.7 SiO_2, 40.5 Al_2O_3, and 11.8 Li_2O.	
□	51-28	293-963		$Li_2O \cdot Al_2O_3 \cdot 4SiO_2$; nominal 64.6 SiO_2, 27.4 Al_2O_3, and 8.0 Li_2O.	
△	51-28	293-963		$Li_2O \cdot Al_2O_3 \cdot 6SiO_2$, nominal 73.2 SiO_2, 20.7 Al_2O_3, and 6.1 Li_2O.	
◇	51-28	293-963		$Li_2O \cdot Al_2O_3 \cdot 8SiO_2$, nominal 78.5 SiO_2, 16.6 Al_2O_3, and 4.9 Li_2O.	
▽	51-28	293-963		$Li_2O \cdot Al_2O_3 \cdot 10\ SiO_2$, nominal 82.0 SiO_2, 13.9 Al_2O_3, and 4.1 Li_2O; actual 81.58 SiO_2, 14.34 Al_2O_3, and 4.08 Li_2O.	

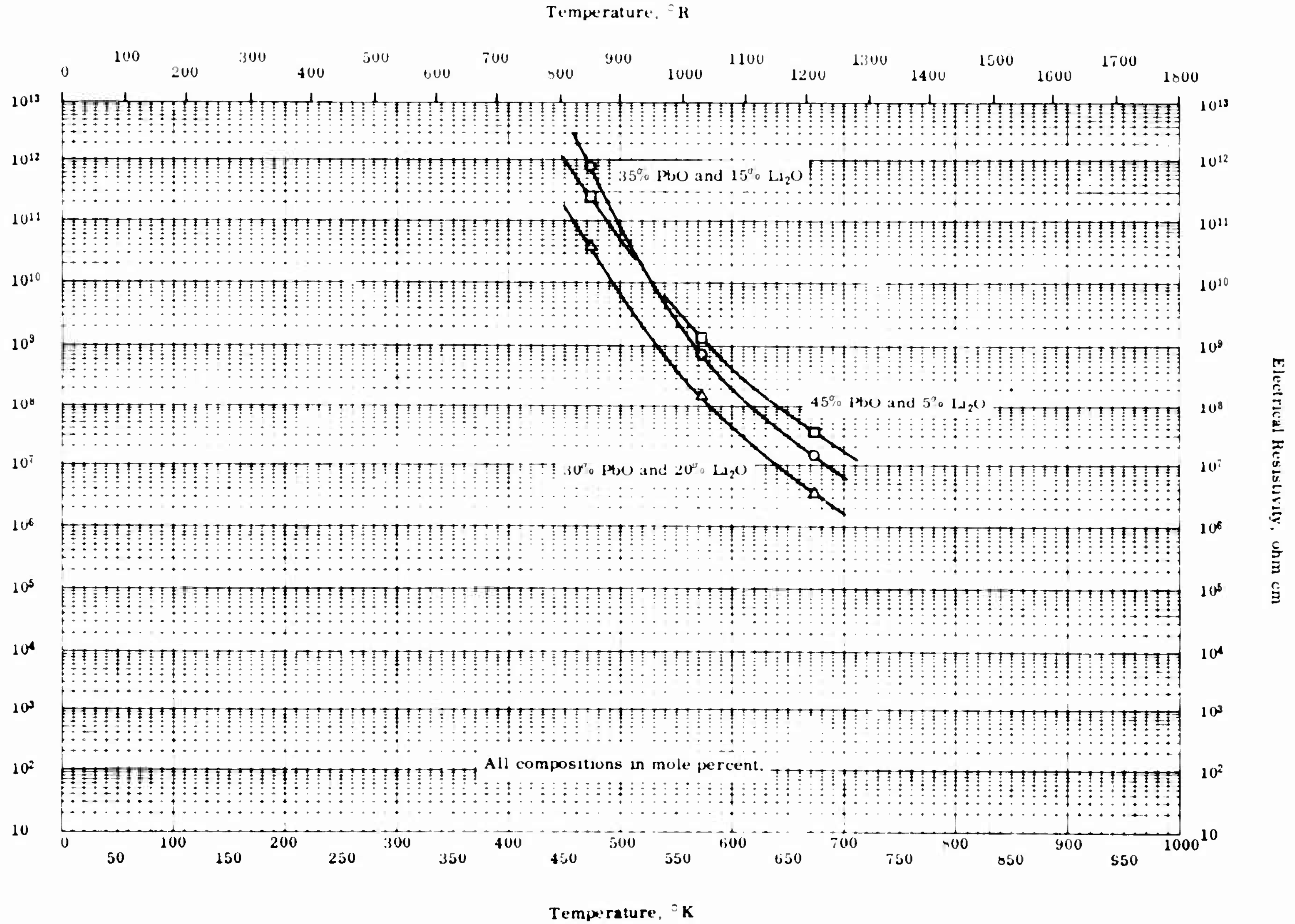


THERMAL LINEAR EXPANSION -- LITHIUM CALCIUM SILICATE GLASS

THERMAL LINEAR EXPANSION -- LITHIUM CALCIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-39	293-773		75.67 SiO_2, 13.56 Li_2O, 9.35 CaO, 0.54 F_2, and 0.31 R_2O_3.	
□	54-39	293-763		74.15 SiO_2, 13.45 Li_2O, 10.45 CaO, and 0.50 R_2O_3.	
△	54-39	293-758		73.95 SiO_2, 13.26 Li_2O, 10.50 CaO, 0.69 R_2O_3, and 0.38 F_2.	
◇	54-39	293-723		73.75 SiO_2, 13.05 Li_2O, 9.94 CaO, 2.74 F_2, and 0.27 R_2O_3.	
▽	54-39	293-777		64.88 SiO_2, 19.20 CaO, 14.59 Li_2O, and 0.33 R_2O_3.	
●	54-39	293-813		64.54 SiO_2, 25.42 CaO, 9.35 Li_2O, and 0.36 R_2O_3.	
■	54-39	293-781		49.39 SiO_2, 35.42 CaO, 14.58 Li_2O_3, and 0.30 R_2O_3.	

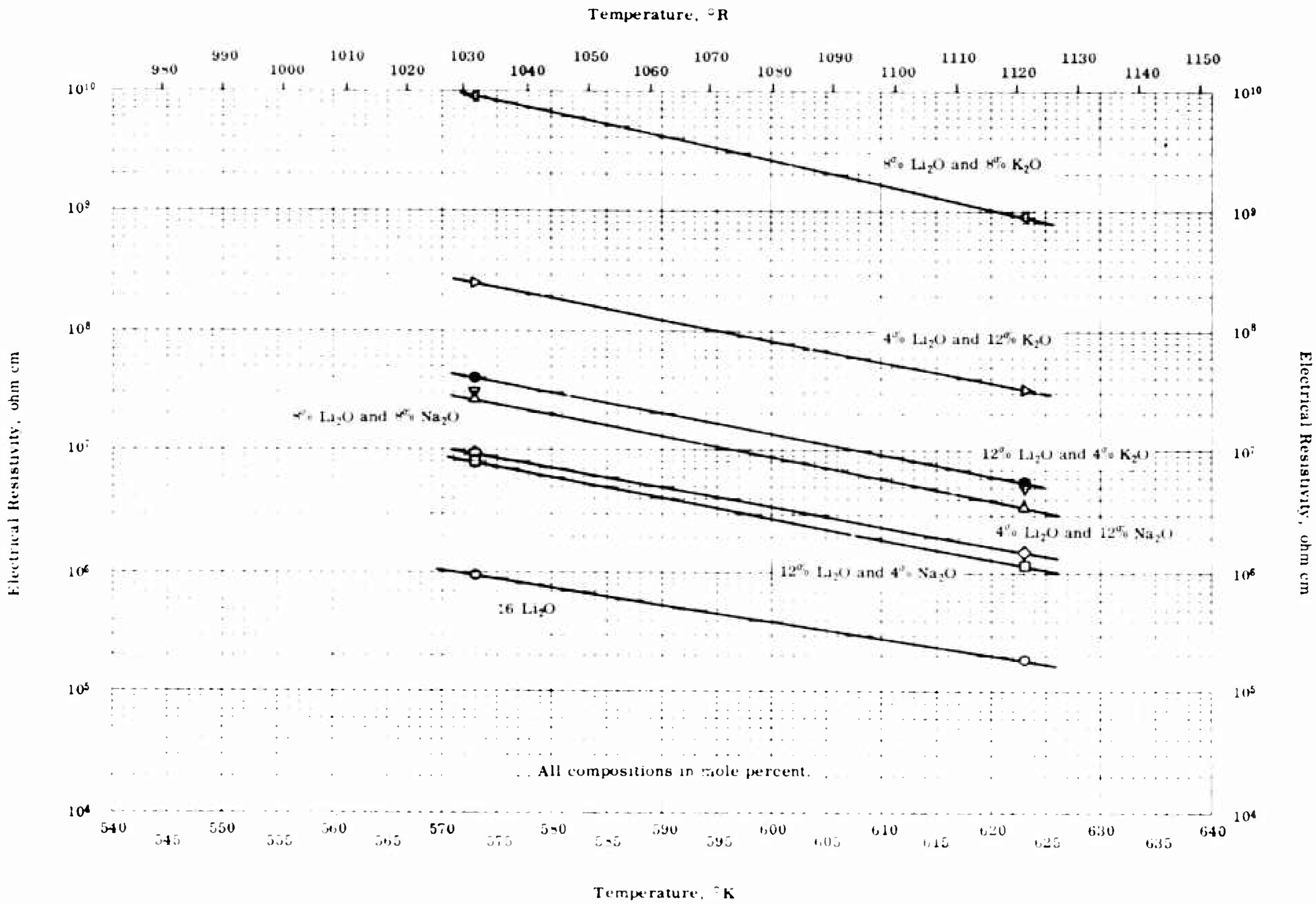


ELECTRICAL RESISTIVITY -- LITHIUM LEAD SILICATE GLASS

ELECTRICAL RESISTIVITY -- LITHIUM LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-12	473-673		50% SiO_2, 35% PbO, and 15% Li_2O (Mole %).	Ground from reagent grade chemicals, melted, cast, annealed over night, ground flat, heated at 10 C min^{-1}.
□	56-12	473-673		50% SiO_2, 45% PbO, and 5% Li_2O (Mole %).	Same as above.
△	56-12	473-673		50% SiO_2, 30% PbO, and 20% Li_2O (Mole %).	Same as above, author report additional detailed data for system (0.01-0.4) Li_2O · (0.99-0.6) PbO · SiO_2

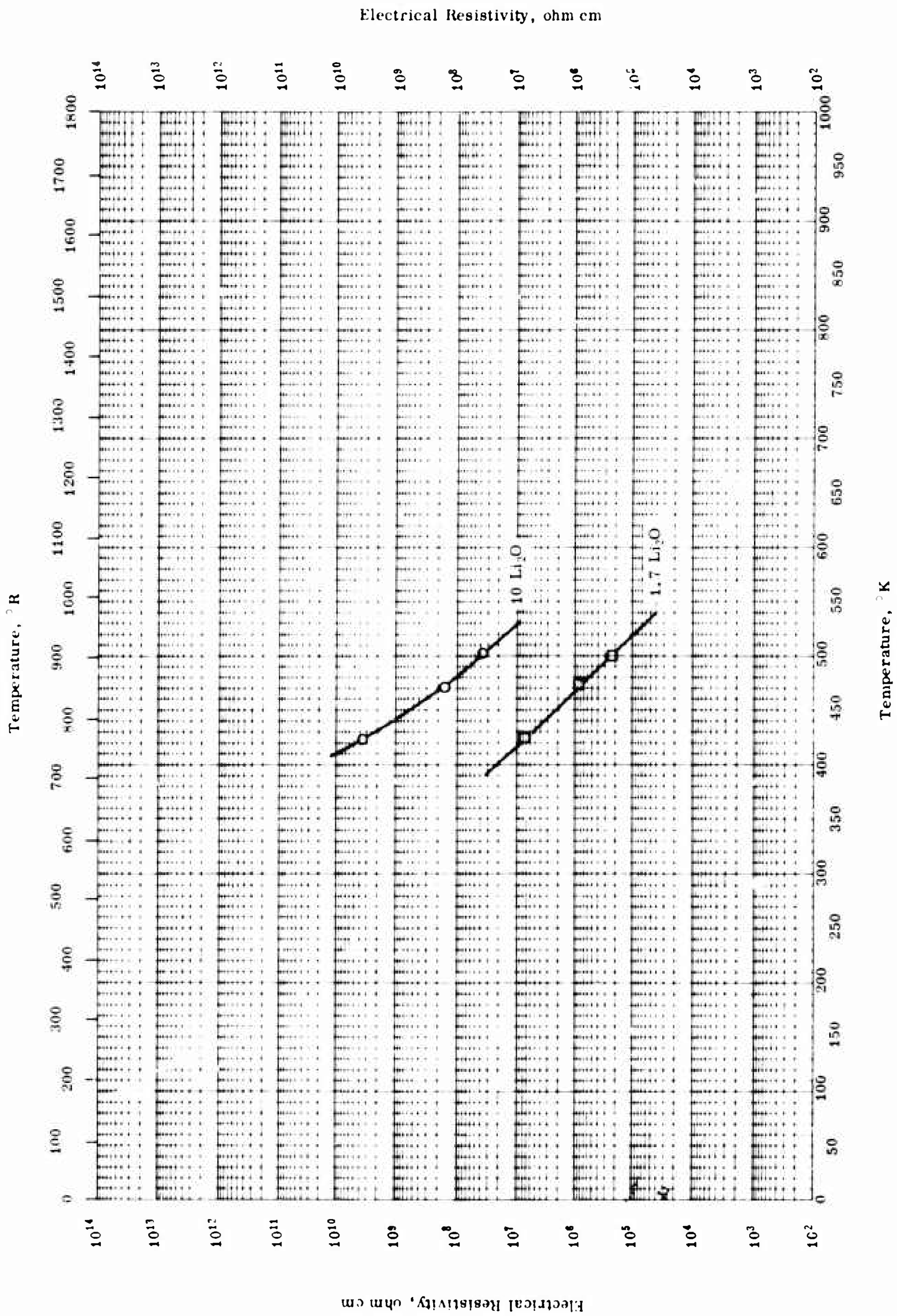


ELECTRICAL RESISTIVITY -- LITHIUM-MAGNESIUM-BARIUM SILICATE GLASS

ELECTRICAL RESISTIVITY -- LITHIUM-MAGNESIUM-BARIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-20	573-623		68% SiO_2, 16% Li_2O, 8% BaO, and 8% MgO (Mole %).	Ground from pure ingredients, melted in furnace at 1260 C, held 8 hrs at 1200 C; samples had Pt electrodes fired on ends.
□	55-20	573-623		68% SiO_2, 12% Li_2O, 8% BaO, 8% MgO, and 4% Na_2O (Mole %).	Same as above.
△	55-20	573-623		68% SiO_2, 8% BaO, 8% Li_2O, 8% MgO, and 8% Na_2O (Mole %).	Same as above.
◇	55-20	573-623		68% SiO_2, 12% Na_2O, 8% BaO, 8% MgO, and 4% Li_2O (Mole %).	Same as above.
▽	55-20	573-623		68% SiO_2, 14.1% K_2O, 8% BaO, 8% MgO, and 1.9% Li_2O (Mole %).	Same as above.
▷	55-20	573-623		68% SiO_2, 12% K_2O, 8% BaO, 8% MgO, and 4% Li_2O (Mole %).	Same as above.
◁	55-20	573-623		68% SiO_2, 8% BaO, 8% MgO, 8% Li_2O, and 8% K_2O (Mole %).	Same as above.
●	55-20	573≈623		68% SiO_2, 12% Li_2O, 8% BaO, 8% MgO, and 4% K_2O (Mole %).	Same as above.

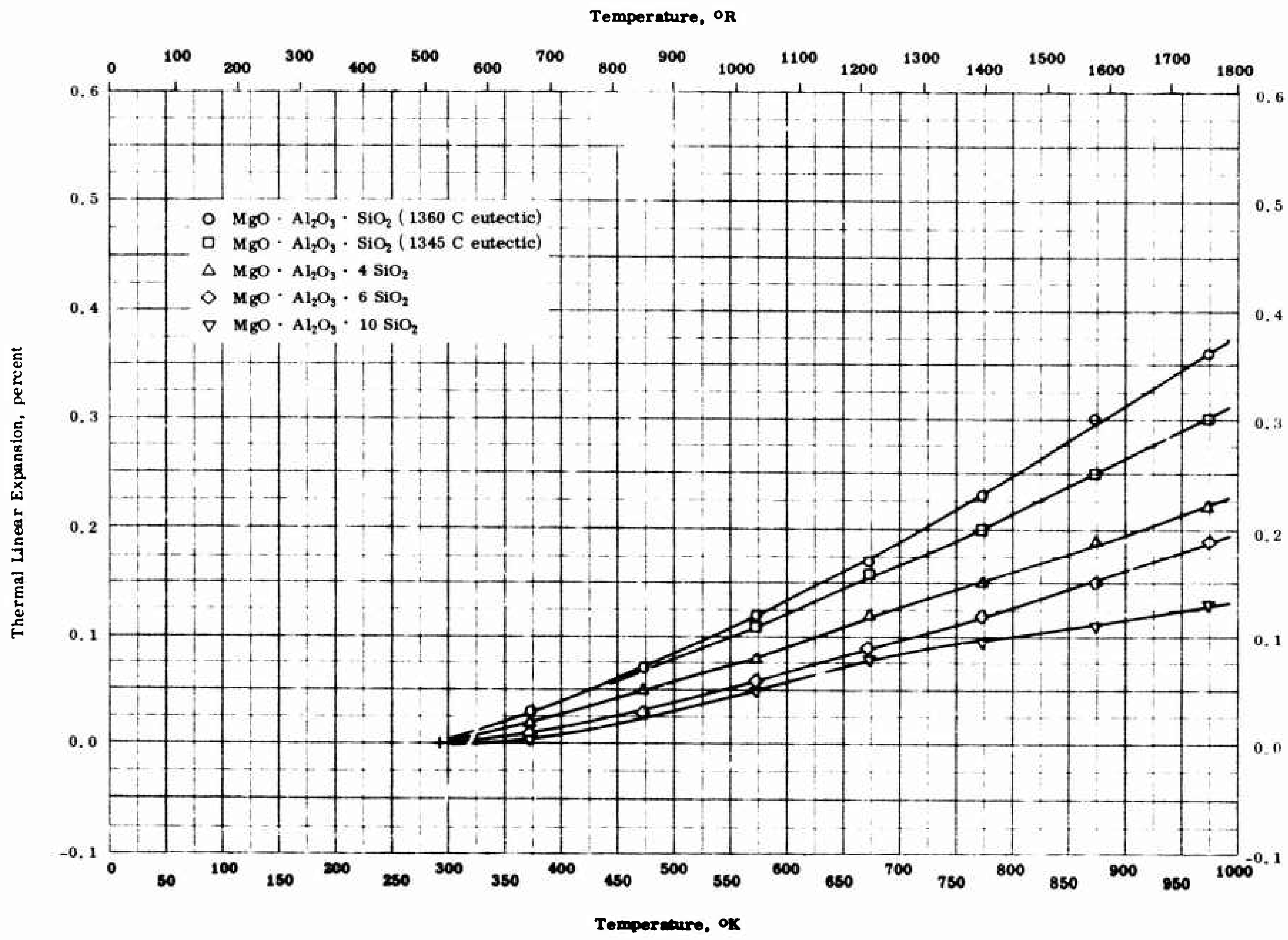


ELECTRICAL RESISTIVITY -- LITHIUM SODIUM SILICATE GLASS

ELECTRICAL RESISTIVITY -- LITHIUM SODIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-18	423-503		73.1 SiO_2, 16.9 Na_2O and 10.0 Li_2O; made from reagent grade materials.	
□	56-18	423-503		67.1 SiO_2, 31.2 Na_2O and 1.7 Li_2O; same as above.	Auth. reports additional detailed data for system (0 to 1.00) Li_2O: (1.00 to 0) Na_2O: $2SiO_2$; only extreme values are shown here.

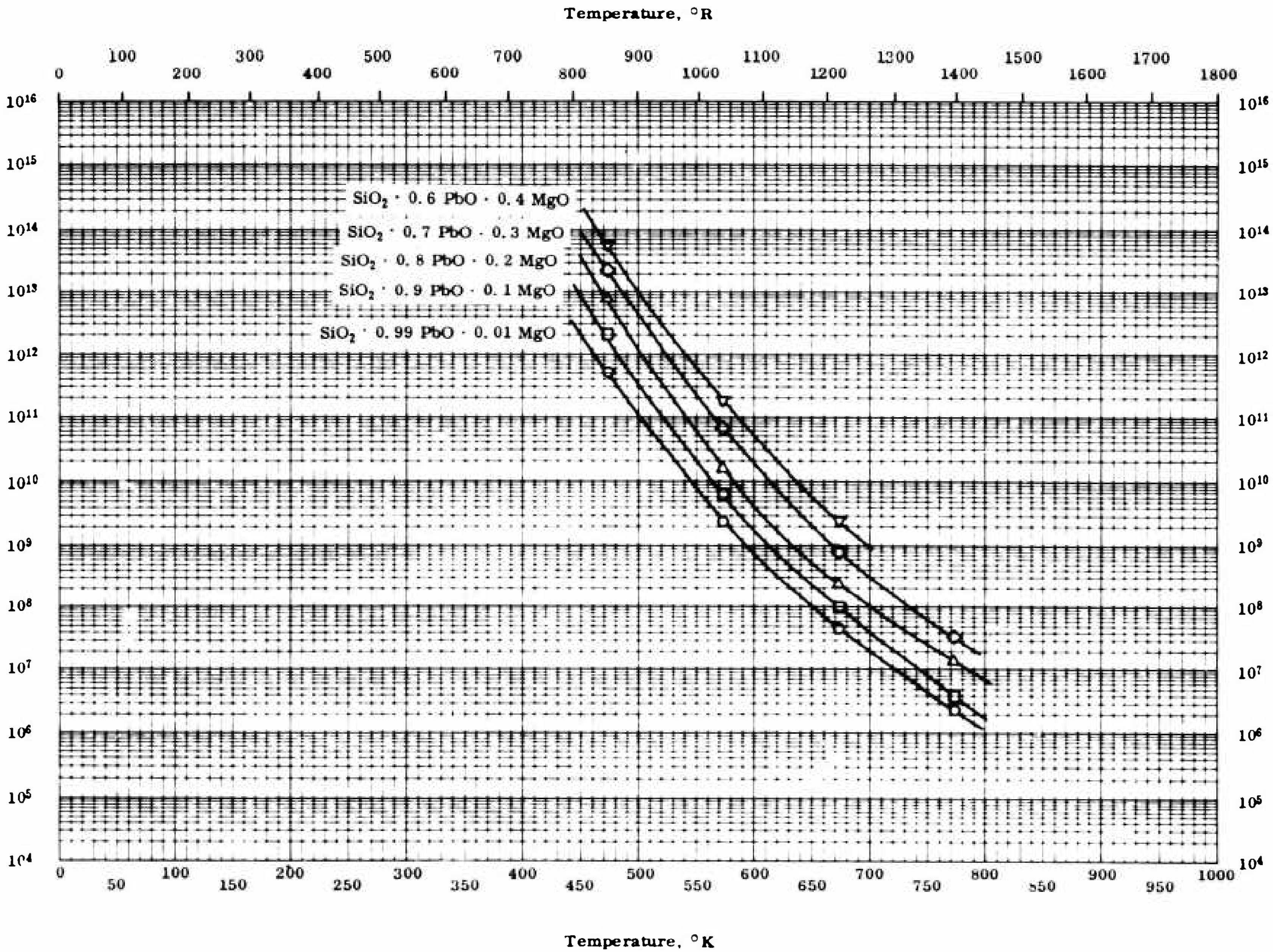


THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINUM SILICATE GLASS

THERMAL LINEAR EXPANSION -- MAGNESIUM ALUMINUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	51-29	293-973		54.0 SiO_2, 25.0 MgO, and 21.0 Al_2O_3; prepared from c.p. MgO, c.p. Al_2O_3, and potter's flint (99.8 SiO_2); 1360 C eutectic MgO · Al_2O_3 · SiO_2.	
□	51-29	293-973		61.4 SiO_2, 20.3 MgO, and 18.3 Al_2O_3; raw materials same as above; 1345 C eutectic MgO · Al_2O_3 · SiO_2.	
△	51-29	293-973		62.8 SiO_2, 26.65 Al_2O_3, and 10.54 MgO; ra[illegible]terials same as above; MgO · Al_2O_3 · 4 SiO_2.	
◇	51-29	293-973		71.7 SiO_2, 20.28 Al_2O_3, and 8.02 MgO; raw materials same as above; MgO · Al_2O_3 · 6 SiO_2.	
▽	51-29	293-973		80.86 SiO_2, 13.72 Al_2O_3, and 5.42 MgO; raw materials same as above; MgO · Al_2O_3 · 10 SiO_2.	

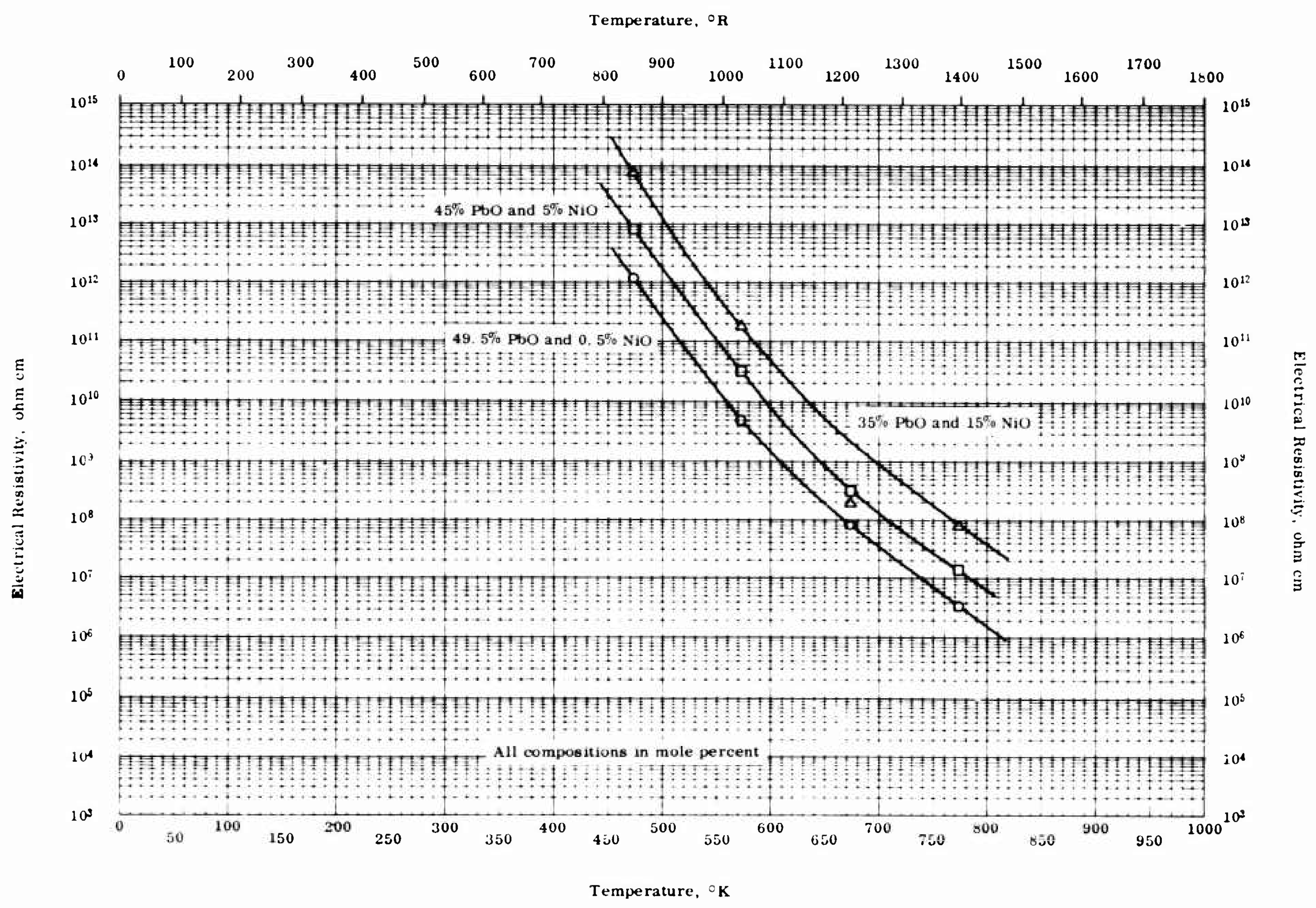


ELECTRICAL RESISTIVITY -- MAGNESIUM LEAD SILICATE GLASS

ELECTRICAL RESISTIVITY -- MAGNESIUM LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-24 also 56-12	473-773		$SiO_2 \cdot 0.99\ PbO \cdot 0.01\ MgO$.	Ground from reagent grade materials, melted, cast, annealed overnight, ground flat; heated at 10 C min^{-1}.
□	53-24 also 56-12	473-773		$SiO_2 \cdot 0.9\ PbO \cdot 0.1\ MgO$.	Same as above.
△	53-24 also 56-12	473-773		$SiO_2 \cdot 0.8\ PbO \cdot 0.2\ MgO$.	Same as above.
◇	53-24 also 56-12	473-773		$SiO_2 \cdot 0.7\ PbO \cdot 0.3\ MgO$.	Same as above.
▽	53-24 also 56-12	473-773		$SiO_2 \cdot 0.6\ PbO \cdot 0.4\ MgO$.	Same as above.

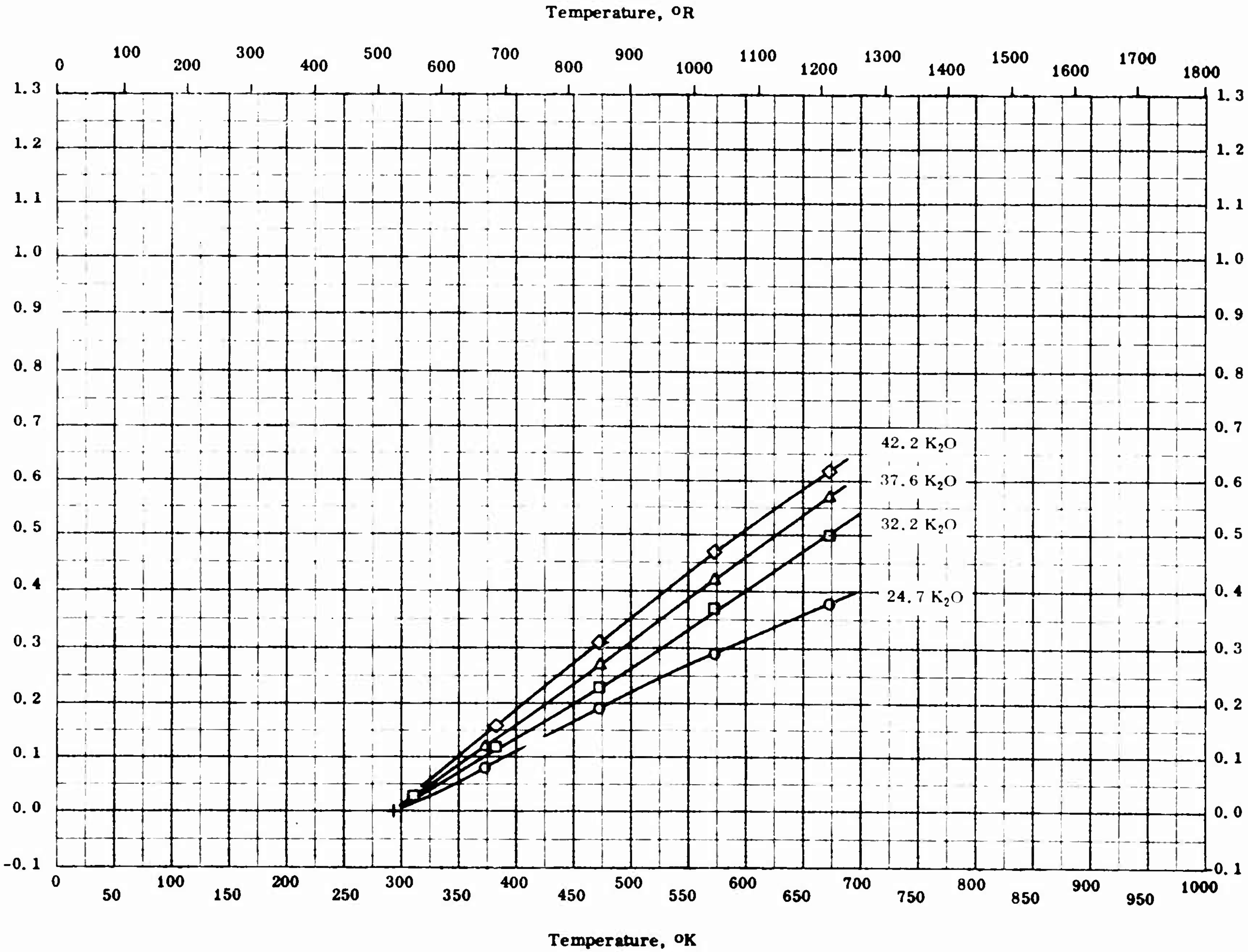


ELECTRICAL RESISTIVITY -- NICKEL-LEAD SILICATE GLASS

ELECTRICAL RESISTIVITY -- NICKEL-LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-25 also 56-12	473-773		50.0% SiO_2, 49.5% PbO, and 0.5% NiO (Mole %).	
□	54-25 also 56-12	473-773		50.0% SiO_2, 45% PbO, and 5% NiO (Mole %).	
△	54-25 also 56-12	473-773		50.0% SiO_2, 35% PbO, and 15% NiO (Mole %).	

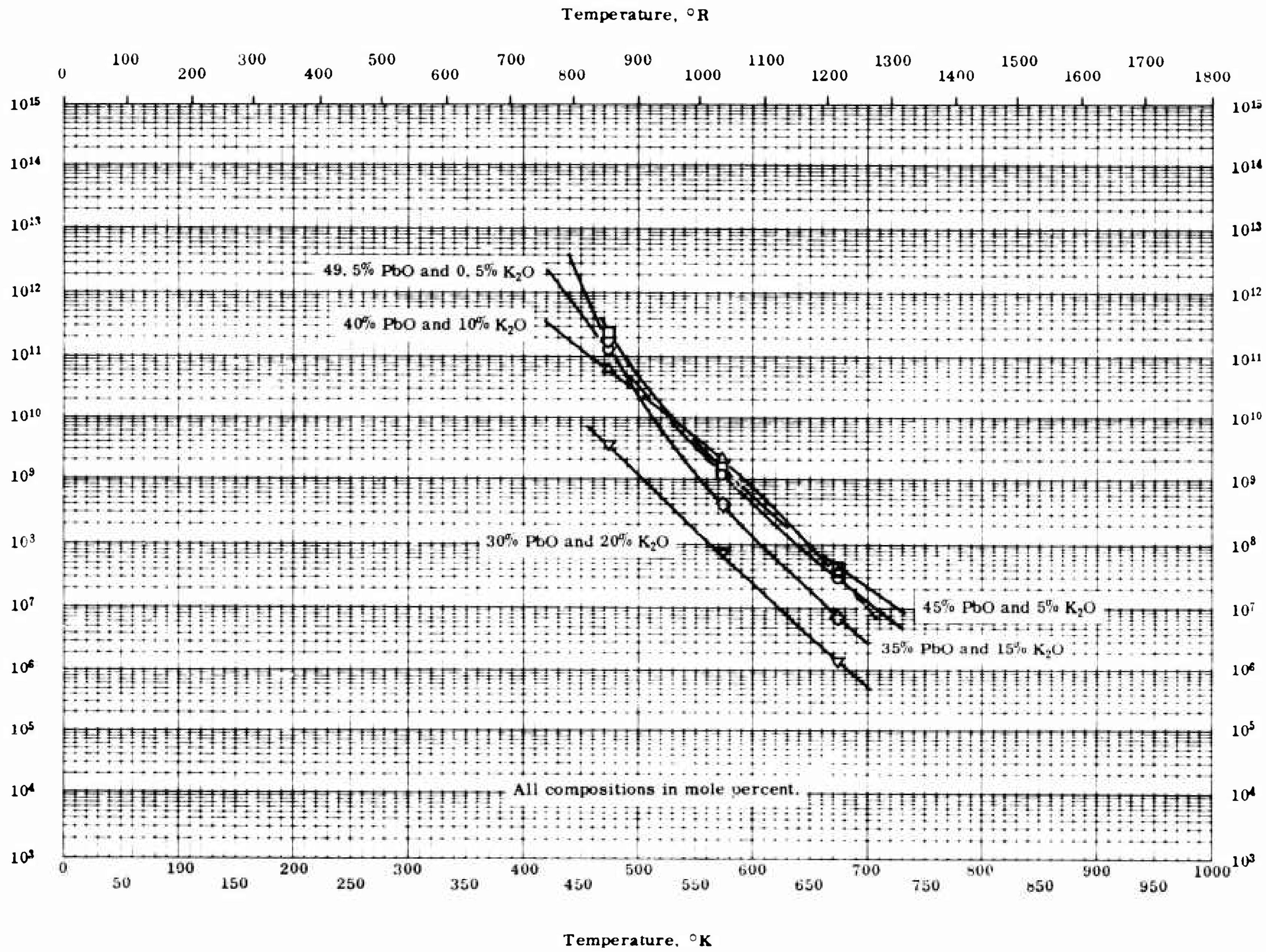


THERMAL LINEAR EXPANSION -- POTASSIUM SILICATE GLASS

THERMAL LINEAR EXPANSION -- POTASSIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-35	293-673		75.3 SiO_2 and 24.7 K_2O; density 147.6 lb ft^{-3}.	2 specimens, one of which was reannealed.
□	56-35	293-673		67.8 SiO_2 and 32.2 K_2O; density 149.8 lb ft^{-3}.	Reannealed.
△	56-35	293-673		62.4 SiO_2 and 37.6 K_2O; density 151.9 lb ft^{-3}.	2 specimens, one of which was reannealed.
◇	56-35	293-673		57.8 SiO_2 and 42.2 K_2O; density 153.3 lb ft^{-3}.	Reannealed.



ELECTRICAL RESISTIVITY -- POTASSIUM LEAD SILICATE GLASS

ELECTRICAL RESISTIVITY -- POTASSIUM LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-12	473-673		50.0 SiO_2, 49.5% PbO, and 0.5% K_2O (Mole %).	Ground from reagent grade materials, melted, cast, annealed overnight, ground flat; heated at 10 C min^{-1}.
□	56-12	473-673		50.0% SiO_2, 45% PbO, and 5% K_2O (Mole %).	Same as above.
△	56-12	473-673		50.0% SiO_2, 40% PbO, and 10% K_2O (Mole %).	Same as above.
◇	56-12	473-673		50.0% SiO_2, 35% PbO, and 15% K_2O (Mole %).	Same as above.
▽	56-12	473-673		50.0% SiO_2, 30% PbO, and 20% K_2O (Mole %).	Same as above.

PROPERTIES OF SODIUM SILICATE GLASS

MOST PROBABLE VALUES

Property	C.G.S. Units	Brit. Eng. Units
Density.	2.52 g cm^{-3}	157 lb ft^{-3}

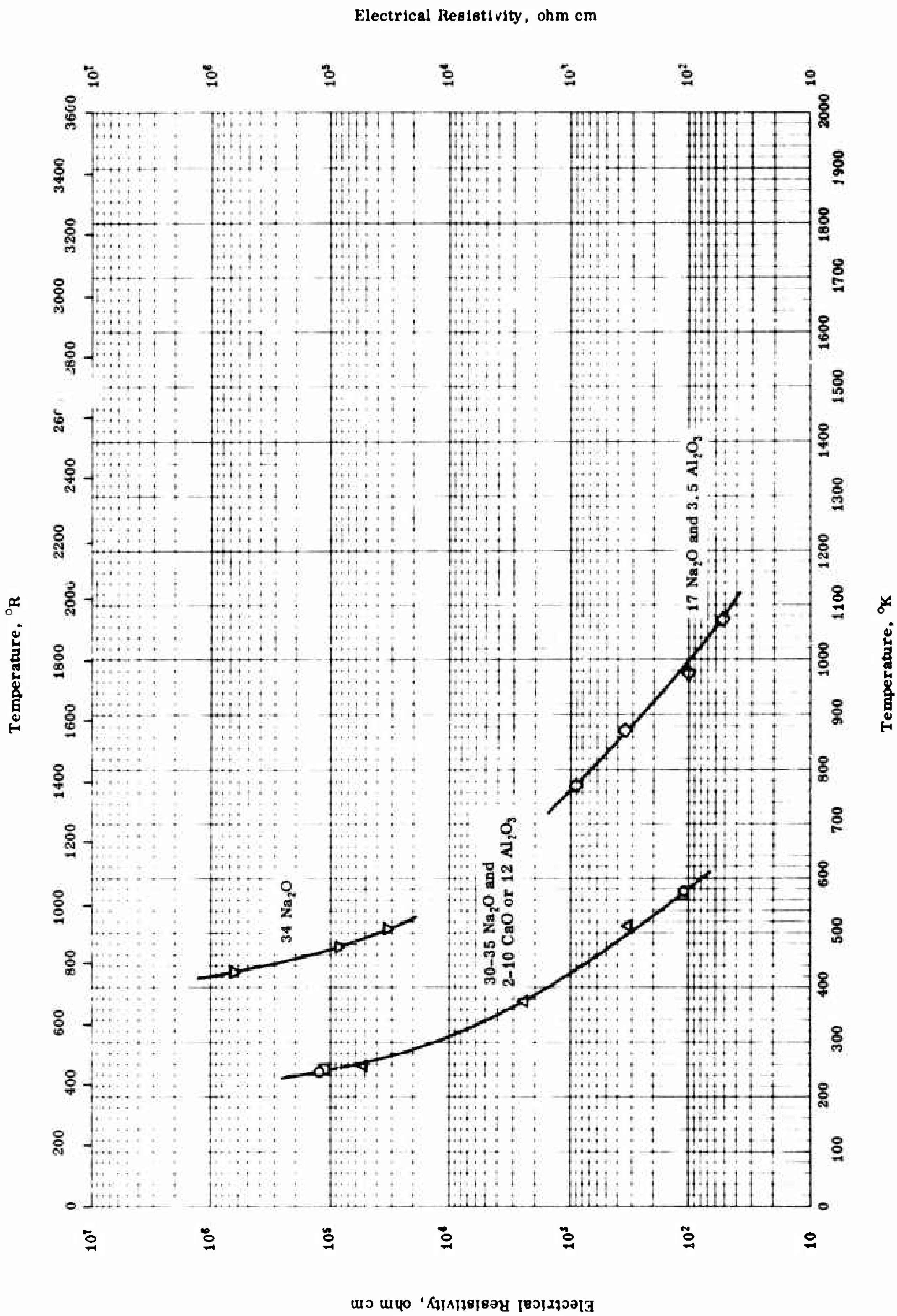
REPORTED VALUES

Density		g cm^{-3}	lb ft^{-3}
	○	2.509 ± 0.001	156.6 ± 0.06
	□	2.5213	157.40
	△	2.5232	157.52
	◇	2.5334	158.16

PROPERTIES OF SODIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-13	298		Plate glass.	Weight in air and in Kerosene.
□	51-17 also 52-2	293		White clear plate glass from Pittsburg Plate Glass Co.	Weight and volume by water displacement
△	51-17 also 52-2	293		Solex "S" plate glass; same as above.	Same as above.
◇	51-17 also 52-2	293		Solex 2808X plate glass; same as above.	Same as above.

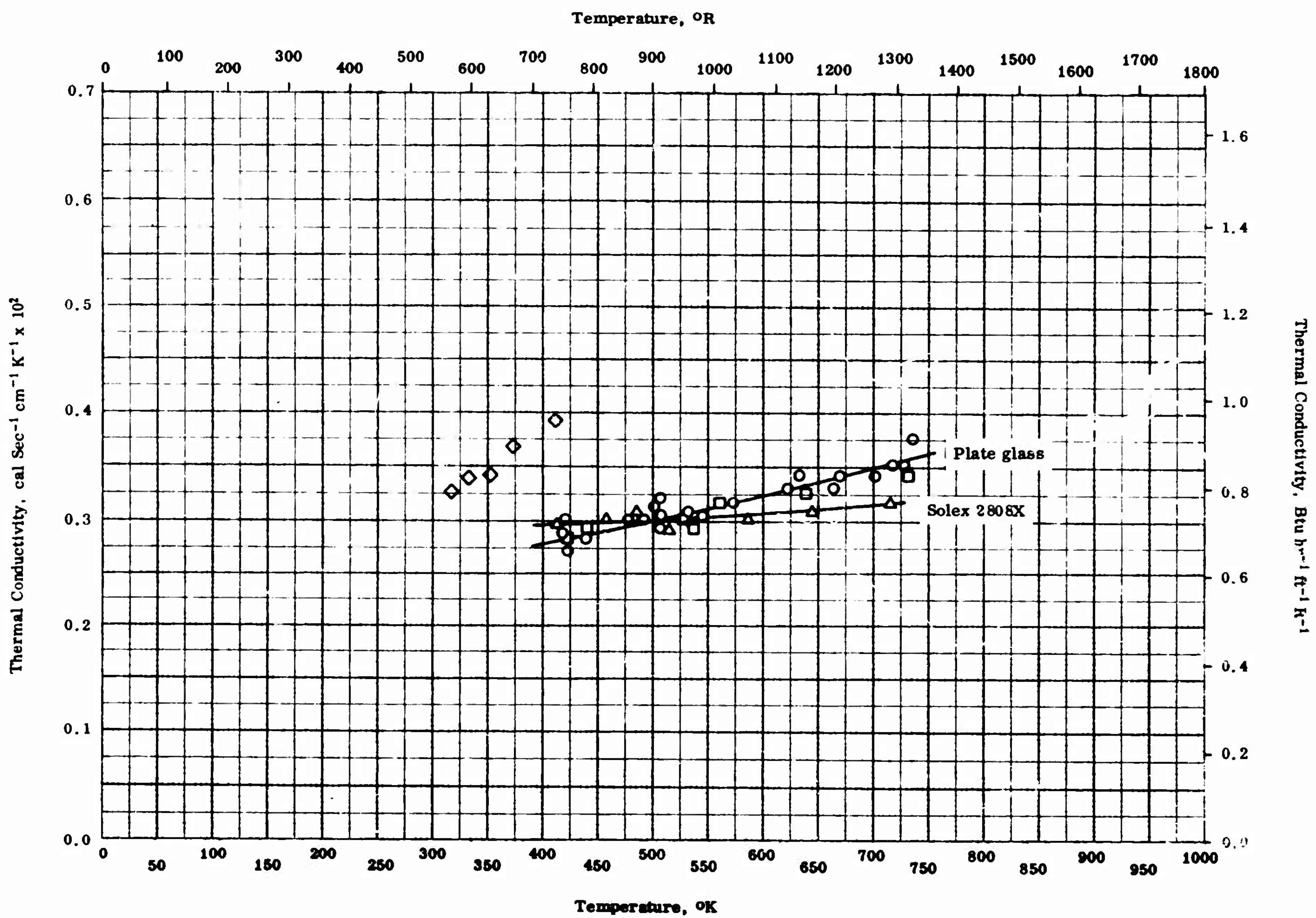


ELECTRICAL RESISTIVITY -- SODIUM SILICATE GLASS

ELECTRICAL RESISTIVITY -- SODIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-21	245-578		60 SiO_2, 30 Na_2O and 10 CaO.	
□	53-21	245-578		63 SiO_2, 35 Na_2O and 2 CaO.	
△	53-21	258-513		56 SiO_2, 32.5 Na_2O and 11.5 Al_2O_3.	
◇	46- 2	773-1173		67.5 SiO_2, 17.0 Na_2O, 12.0 CaO and 3.5 Al_2O_3.	
▽	56-18	423-503		66.0 SiO_2 and 34.0 Na_2O; made from reagent grade materials.	

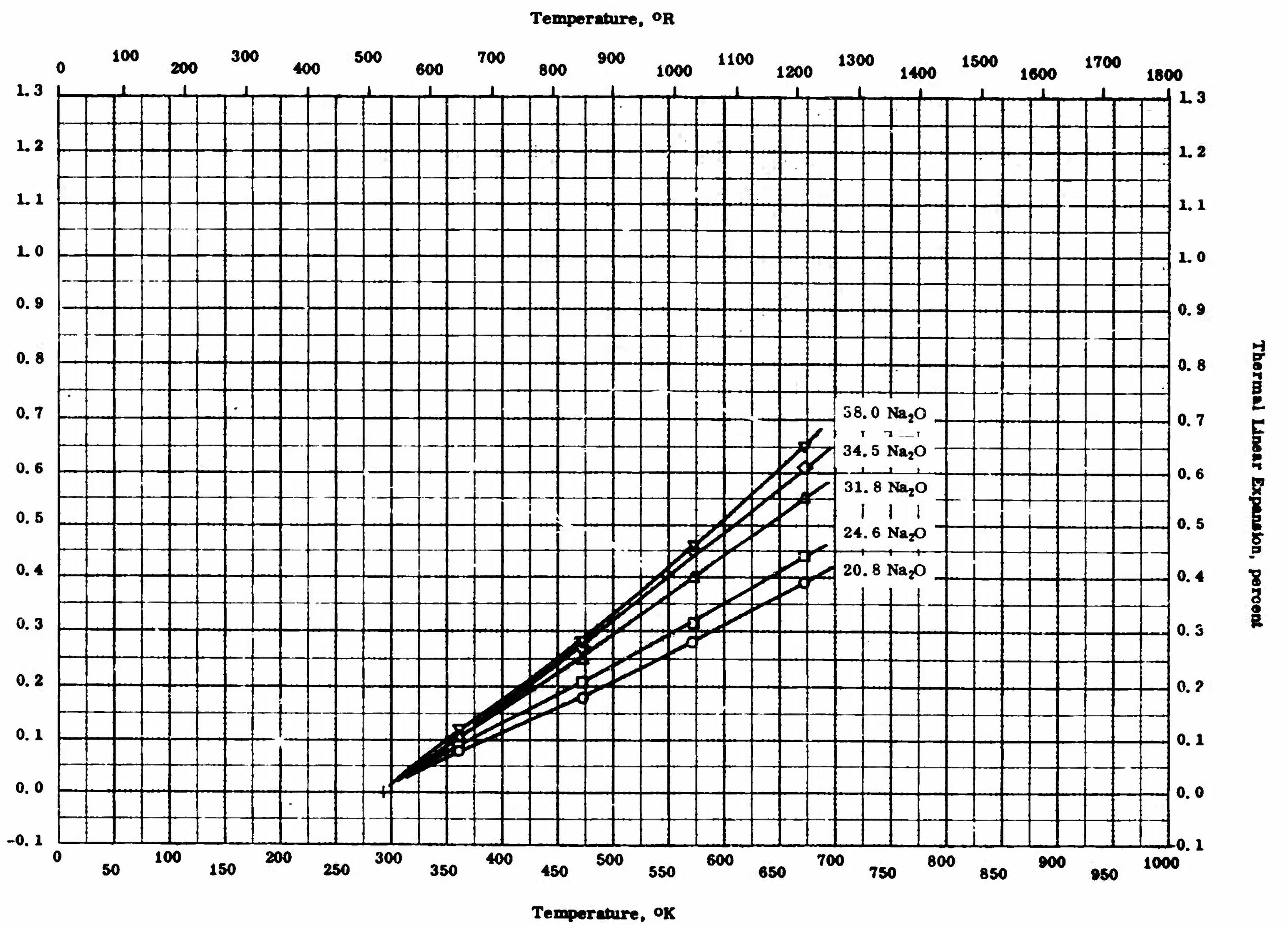


THERMAL CONDUCTIVITY -- SODIUM SILICATE GLASS

THERMAL CONDUCTIVITY -- SODIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	54-4	420-736		White clear plate glass.	
□	54-4	421-731		Solex "S" plate glass.	
△	54-4	413-715		Solex 2808X plate glass.	
◇	53-3	317-411		Plate glass; densith 156 lb ft^{-3}.	

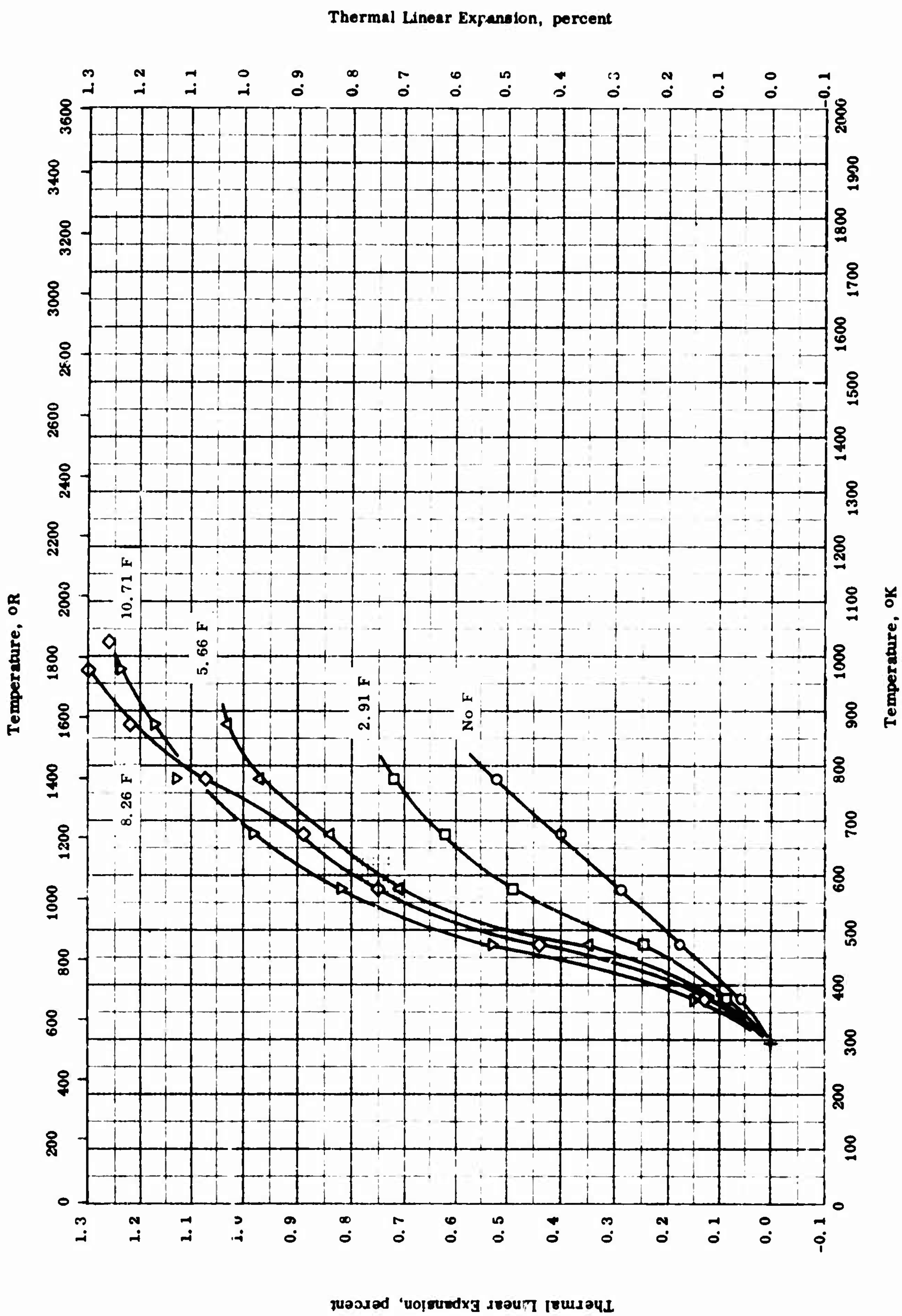


THERMAL LINEAR EXPANSION -- SODIUM SILICATE GLASS

THERMAL LINEAR EXPANSION -- SODIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-35	293-673		79.2 SiO_2, 20.8 Na_2O; density 148.8 lb ft^{-3}.	
□	56-35	293-673		75.4 SiO_2, 24.6 Na_2O; density 151.1 lb ft^{-3}.	
△	56-35	293-673		68.2 SiO_2, 31.8 Na_2O; density 154.3 lb ft^{-3}.	
◇	56-35	293-673		65.5 SiO_2, 34.5 Na_2O; density 155.5 lb ft^{-3}.	
▽	56-35	293-673		62.0 SiO_2, 38.0 Na_2O; density 156.5 lb ft^{-3}.	

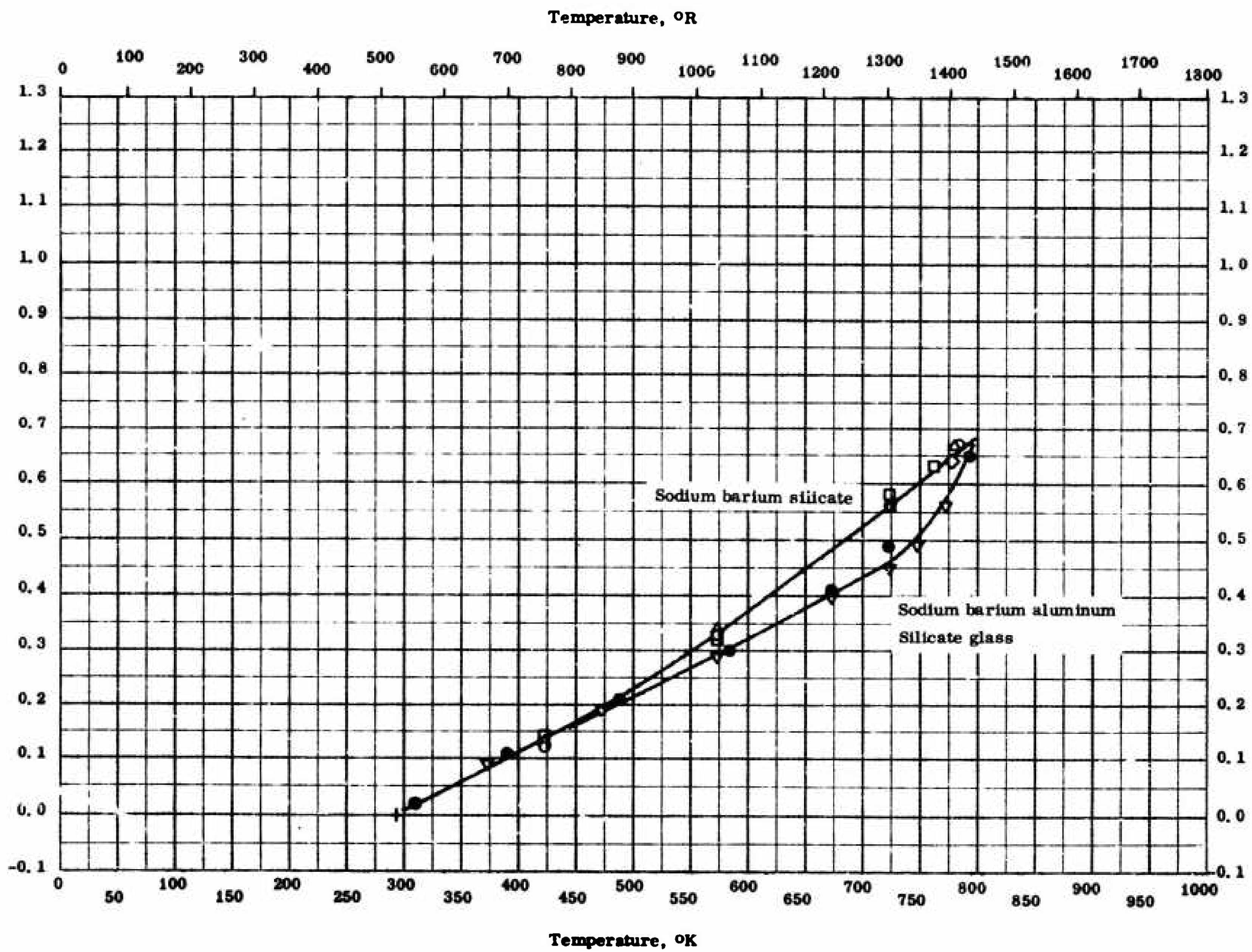


THERMAL LINEAR EXPANSION -- SODIUM SILICATE GLASS WITH FLUORINE

THERMAL LINEAR EXPANSION -- SODIUM SILICATE GLASS WITH FLUORINE

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	56-36	373-773	± 2	74.41 SiO_2 and 25.59 Na_2O.	Pure materials heated to 780 C in muffle furnace and furnace-cooled.
□	56-36	373-773	± 2	72.24 SiO_2, 24.85 Na_2O, and 2.91 F.	Same as above.
△	56-36	373-873	± 2	70.20 SiO_2, 24.14 Na_2O, and 5.66 F.	Same as above.
◇	56-36	373-1023	± 2	68.27 SiO_2, 23.47 Na_2O, and 8.26 F.	Same as above.
▽	56-36	373-973	± 2	66.44 SiO_2, 22.85 Na_2O, and 10.71 F.	Same as above.

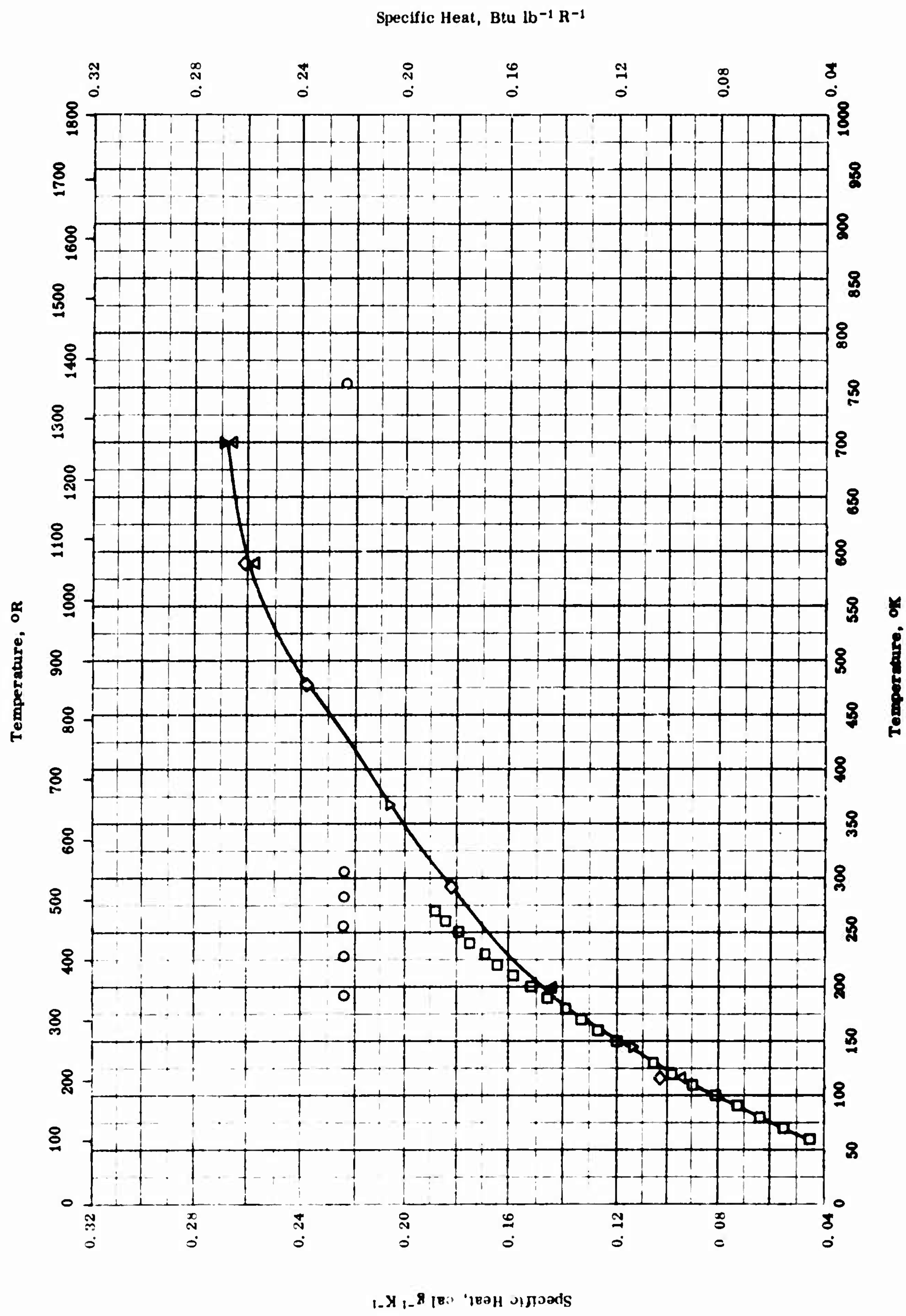


THERMAL LINEAR EXPANSION -- SODIUM BARIUM SILICATE GLASS

THERMAL LINEAR EXPANSION -- SODIUM BARIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error σ	Sample Specifications	Remarks
○	52-26	293-783		$Na_2O \cdot BaO \cdot 5\,SiO_2$; 58.25 SiO_2, 29.74 BaO, and 12.02 Na_2O.	Mixed, melted in kyanite crucible, cast in graphite mold, and annealed.
□	52-26	293-761		$Na_2O \cdot BaO \cdot 4\,SiO_2$; 52.75 SiO_2, 33.65 BaO, and 13.6 Na_2O.	Formed as above.
△	52-26	293-781		$Na_2O \cdot BaO \cdot 3\,SiO_2$; 45.56 SiO_2, 38.76 BaO, and 15.68 Na_2O.	Formed as above.
◇	52-26	293-777		$Na_2O \cdot BaO \cdot 2\,SiO_2$; 45.71 BaO, 35.81 SiO_2, and 18.48 Na_2O.	Formed as above.
▽	57-23	293-773		Sodium barium aluminosilicate glass; 71.3 SiO_2, 17.4 Na_2O, 9.0 BaO, and 2.0 Al_2O_3; refractive index 1.508 at room temperature.	100 C hr^{-1} heating rate.
●	57-23	298-793		Same as above.	Cooling cycle for above sample.

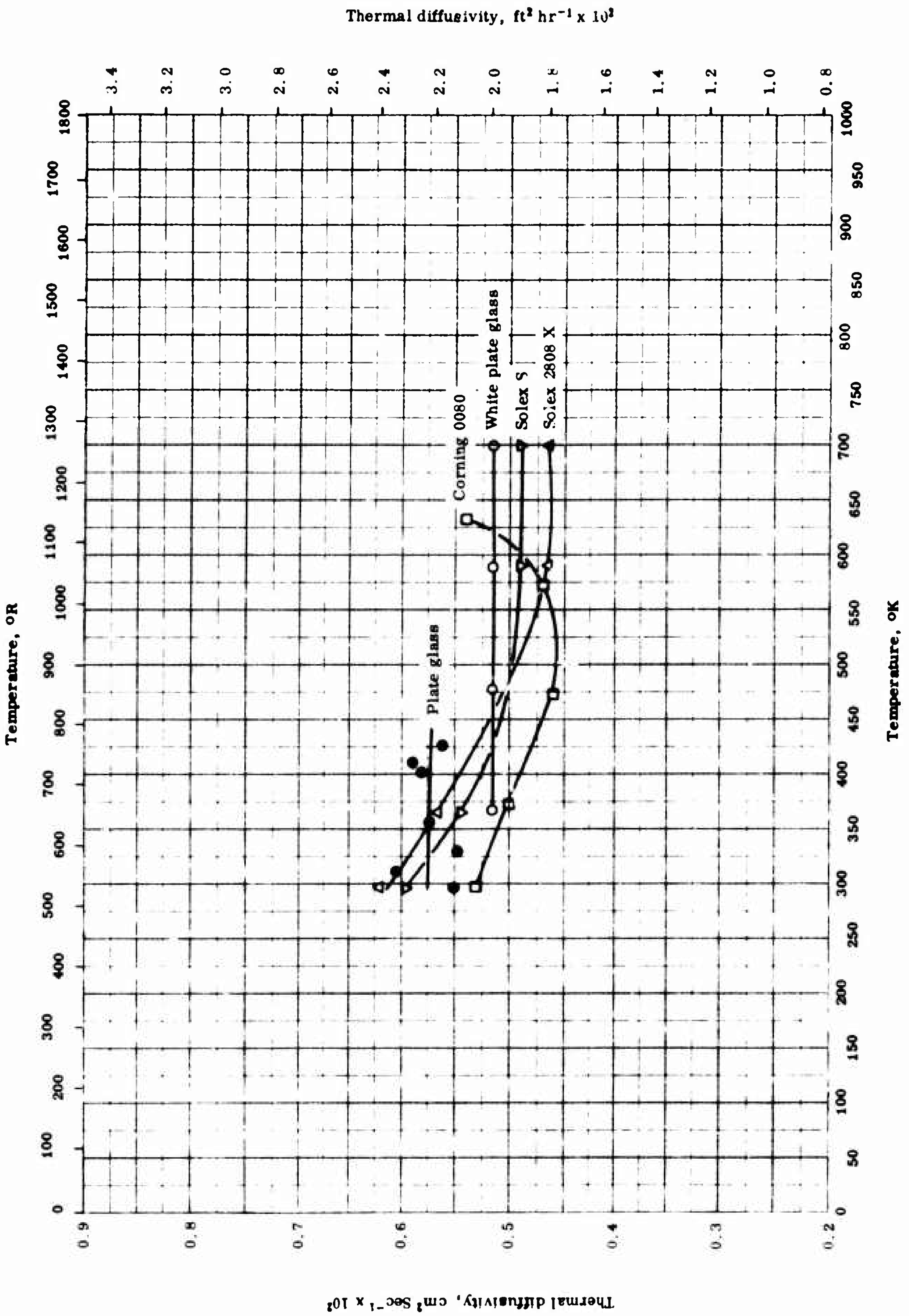


SPECIFIC HEAT -- SODA-LIME SILICATE GLASS

SPECIFIC HEAT -- SODA-LIME SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	58-12	191-753		Soda lime plate glass No. 9330 of Libbey-Owens Ford.	
□	57-19	58-270		Sodium silicate glass No. 23; commercial purity.	
△	54-4 also 60-1	116-700	± 1	Solex S from Pittsburgh Plate Glass Co.; density 157 lb ft^{-3} at 32 F.	
◇	54-4 also 60-1	116-700	± 1	Solex 2808 X from Pittsburgh Plate Glass Co.; density 158 lb ft^{-3}, at 32 F.	
▽	54-4 also 60-1	116-700	± 1	White clear plate glass from Pittsburgh Plate Glass Co.; density 157 lb ft^{-3} at 32 F.	Under argon atmosphere.

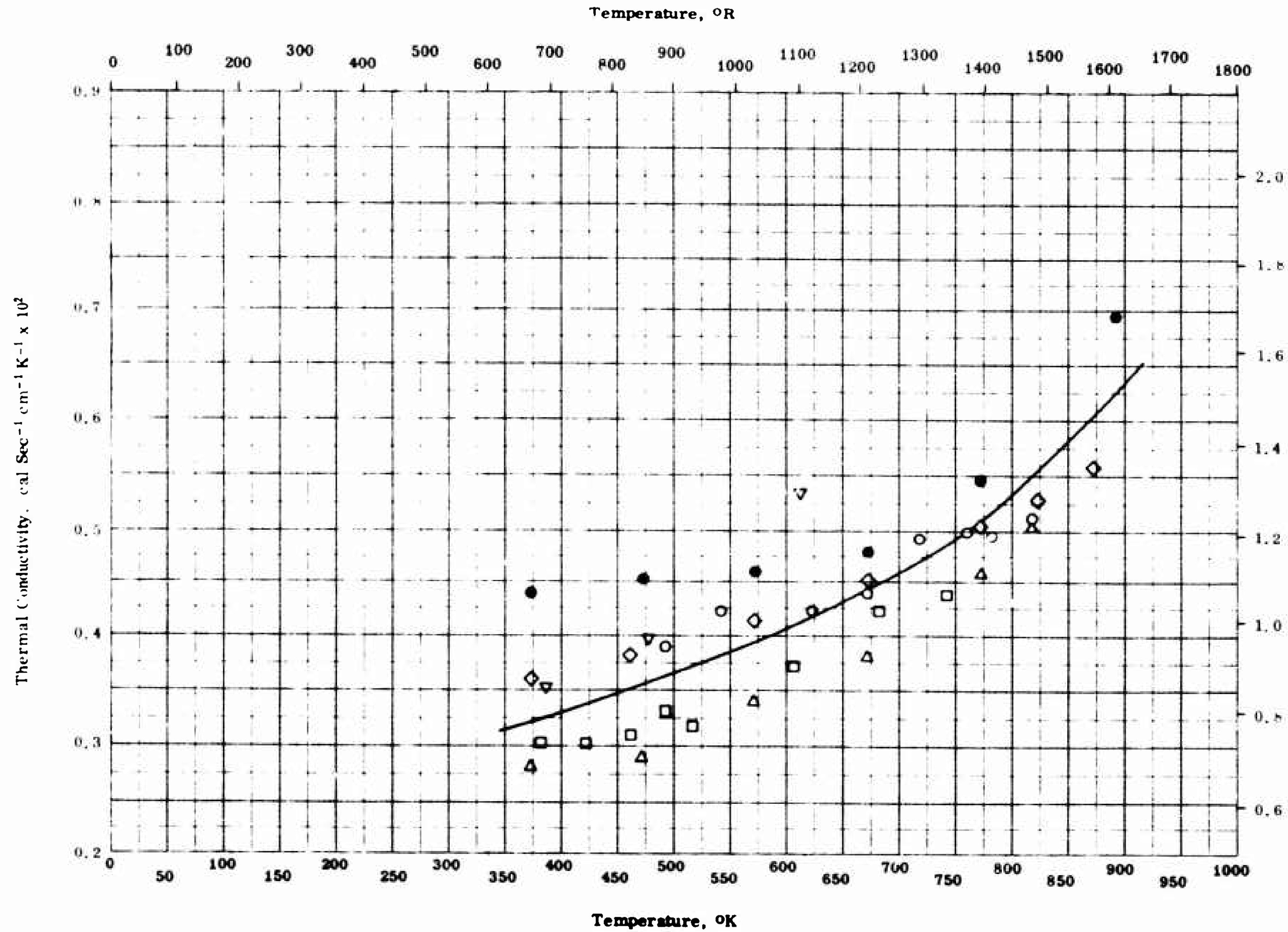


THERMAL DIFFUSIVITY -- SODA-LIME SILICATE GLASS

THERMAL DIFFUSIVITY -- SODA-LIME SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-1	367-700		Plate glass from Pittsburgh Plate Glass Co.; white and clear.	
△	60-1	293-700		Solex 2808 X from Pittsburgh Plate Glass Co.	
▽	60-1	293-700		Solex S from Pittsburgh Plate Glass Co.	
●	62-3	297-422		Ordinary plate glass.	
□	62-1	298-633	15	Corning 0080; 73.4 SiO_2, 16.9 Na_2O, 4.8 CaO, 3.3 MgO, and 0.8 Al_2O_3.	Radiation contribution included in the last two data points.

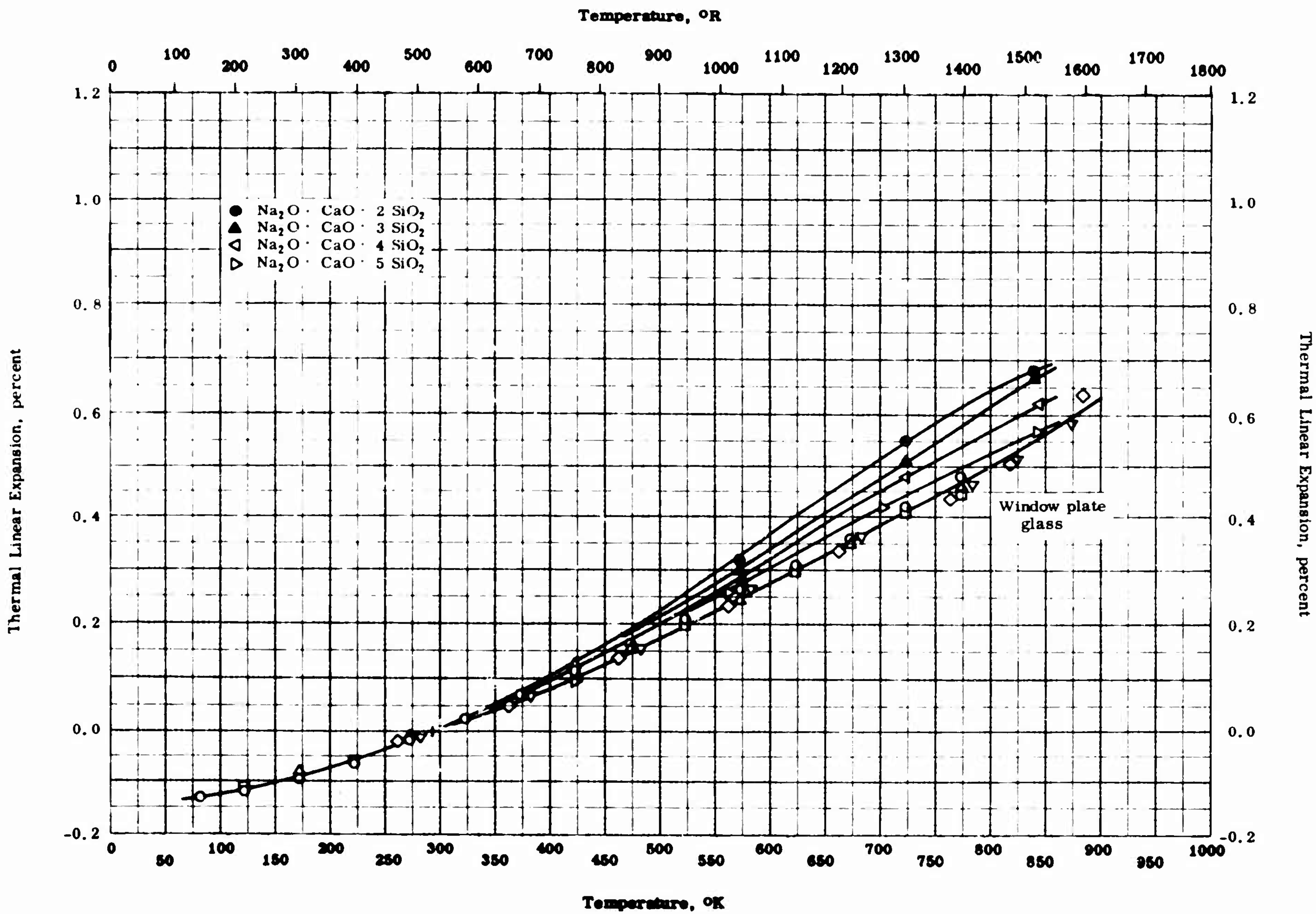


THERMAL CONDUCTIVITY -- SODIUM CALCIUM SILICATE GLASS

THERMAL CONDUCTIVITY -- SODIUM CALCIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-6	493-818		71.25 SiO_2, 13.35 Na_2O, 11.82 CaO, 2.44 MgO, 0.68 Na_2SO_4, 0.26 Al_2O_3, 0.14 Fe_2O_3, and 0.06 NaCl.	
□	55-6	383-743		Same as above.	Sample in form of cube.
△	54-5	373-818		70.84 SiO_2, 13.32 Na_2O, 11.75 CaO, 2.64 MgO, 0.61 Na_2SO_4, 0.56 Fe_2O_3, 0.22 Al_2O_3, and 0.06 NaCl.	
◇	54-3	373-873		Four samples: 58.4-71.3 SiO_2, 13-19.3 Na_2O, 6-11.8 CaO, 0.22-7.89 Al_2O_3, 0-4.3 K_2O, 2.44-3.51 MgO, 0.24-0.68 Na_2SO_4, 0.09-0.56 Fe_2O_3 and 0.06-0.12 NaCl.	
▽	43-1	386-611		69.73 SiO_2, 20.96 Na_2O, 9.05 CaO, 0.18 R_2O_3, and trace K_2O.	Sample in form of cube.
●	53-4	373-893		Corning No. 0080.	

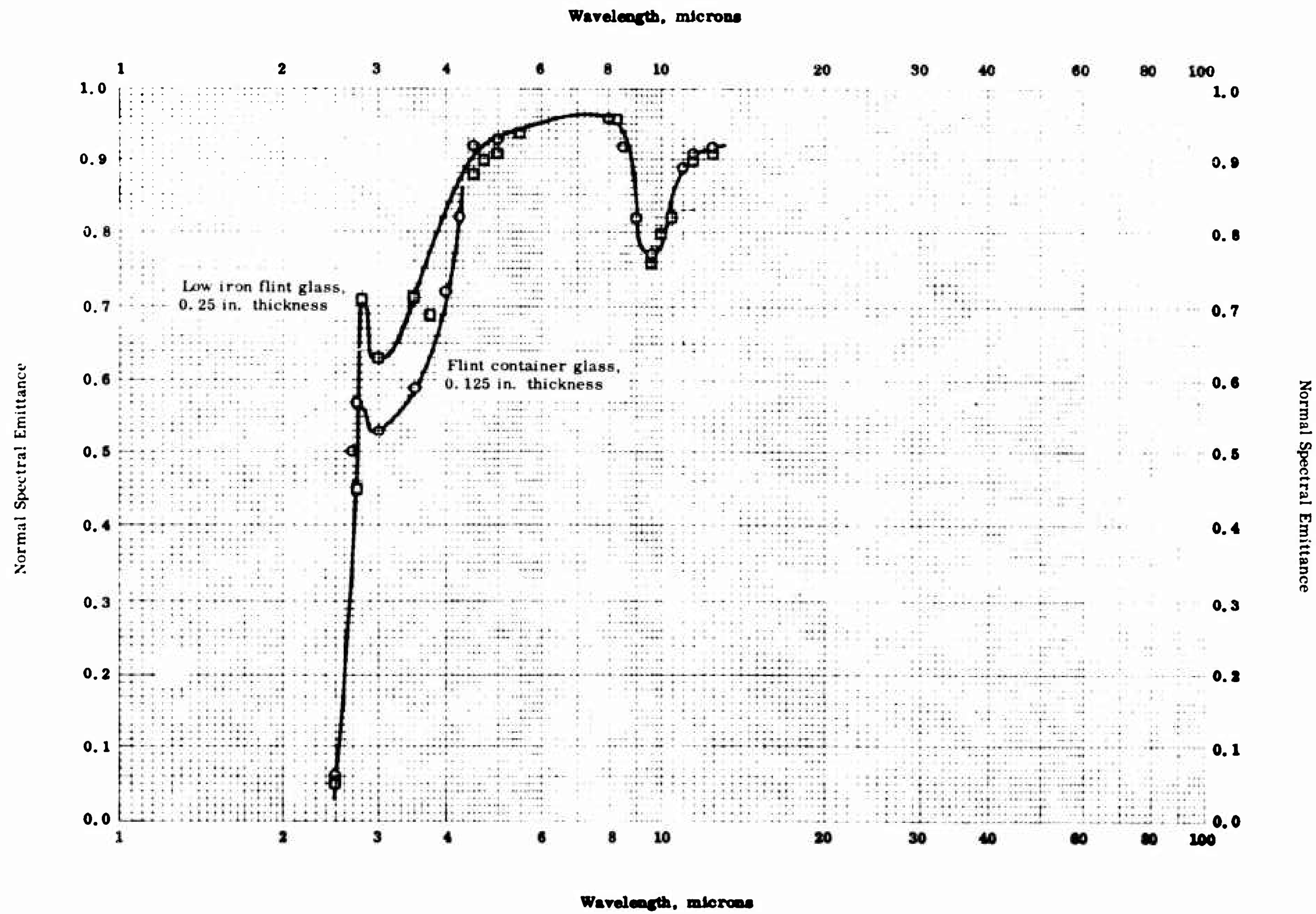


THERMAL LINEAR EXPANSION -- SODIUM CALCIUM SILICATE GLASS

THERMAL LINEAR EXPANSION -- SODIUM CALCIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	52-2	83-773		Solex 2808X Plate Glass by Pittsburgh Plate Glass Co.	
□	52-2	83-773		Solex "S" Plate Glass by Pittsburgh Plate Glass Co.	
△	52-2	83-773		White (clear) Plate Glass by Pittsburgh Plate Glass Co.	
◇	57-44	263-883		Ordinary plate glass.	Measured with heating rate of 2 C min^{-1}.
▽	57-44	273-873		Water white plate glass.	
▷	52-26	293-843		$Na_2O \cdot CaO \cdot 5\,SiO_2$, 71.78 SiO_2, 14.82 Na_2O, and 13.40 CaO.	Mixed, melted in kyanite crucible, cast in graphite mold, and annealed.
◁	52-14	293-843		$Na_2O \cdot CaO \cdot 4\,SiO_2$; 67.05 SiO_2, 17.30 Na_2O, and 15.65 CaO.	Formed as above.
▲	52-14	293-839		$Na_2O \cdot CaO \cdot 3\,SiO_2$, 60.42 SiO_2, 20.78 Na_2O, and 18.80 CaO.	Formed as above.
●	52-14	293-839		$Na_2O \cdot CaO \cdot 2\,SiO_2$, 50.44 SiO_2, 26.02 Na_2O, and 23.44 CaO.	Formed as above.

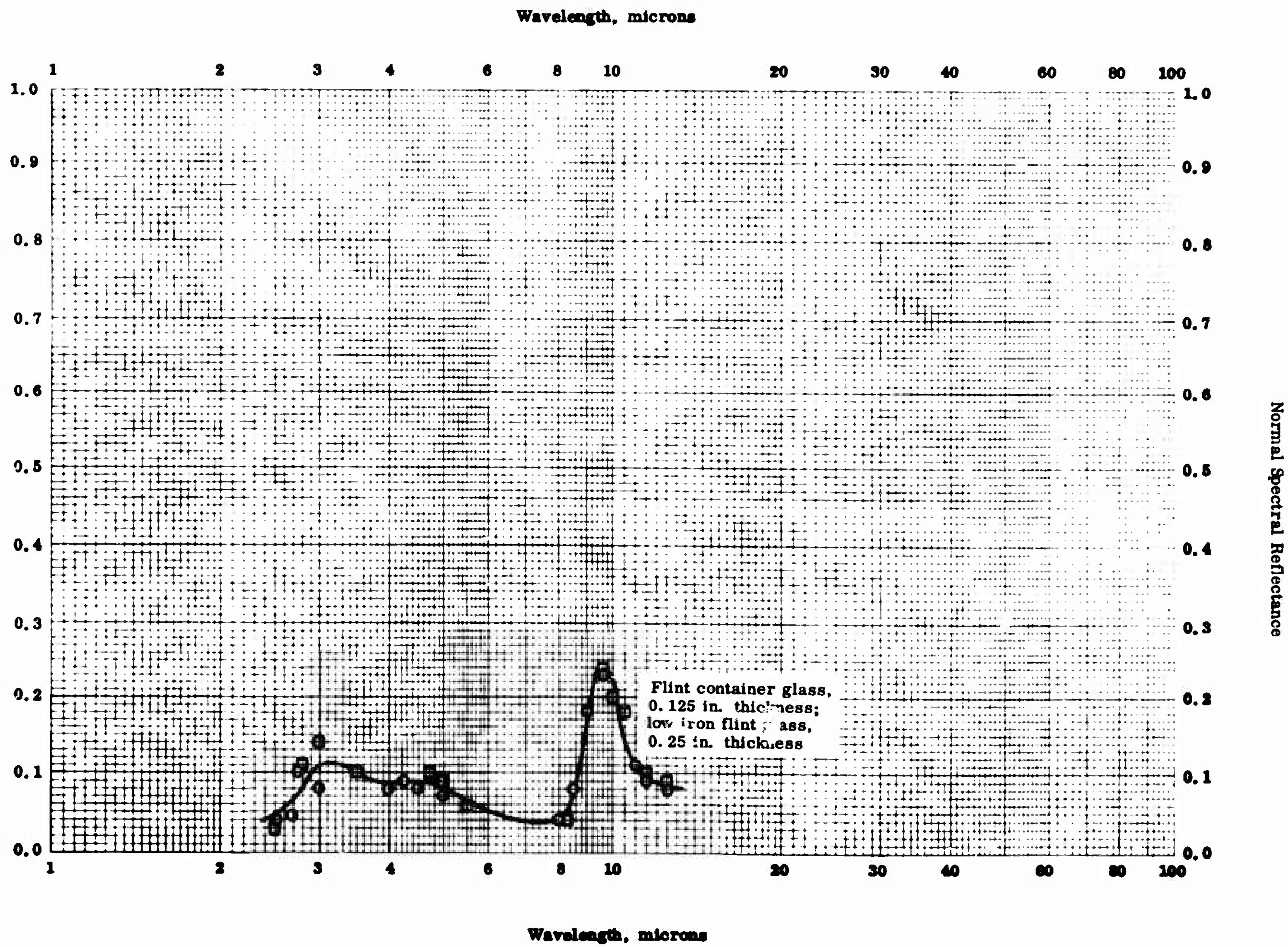


NORMAL SPECTRAL EMITTANCE -- SODIUM CALCIUM SILICATE GLASS

NORMAL SPECTRAL EMITTANCE — SODIUM CALCIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	51-22	811	2.5-12.5		Flint container glass; 71.7 SiO_2, 13.3 ($Na_2O + K_2O$), 11.9 CaO, 1.8 R_2O_3, 0.6 BaO and 0.3 MgO; 0.125 in. thickness.	Data taken from smooth curve.
□	51-22	811	2.5-12.5		Low iron flint glass; 72.2 SiO_2, 13 ($Na_2O + K_2O$), 12.7 CaO, 1.1 R_2O_3, and 0.2 MgO; 0.25 in. thickness.	Same as above.

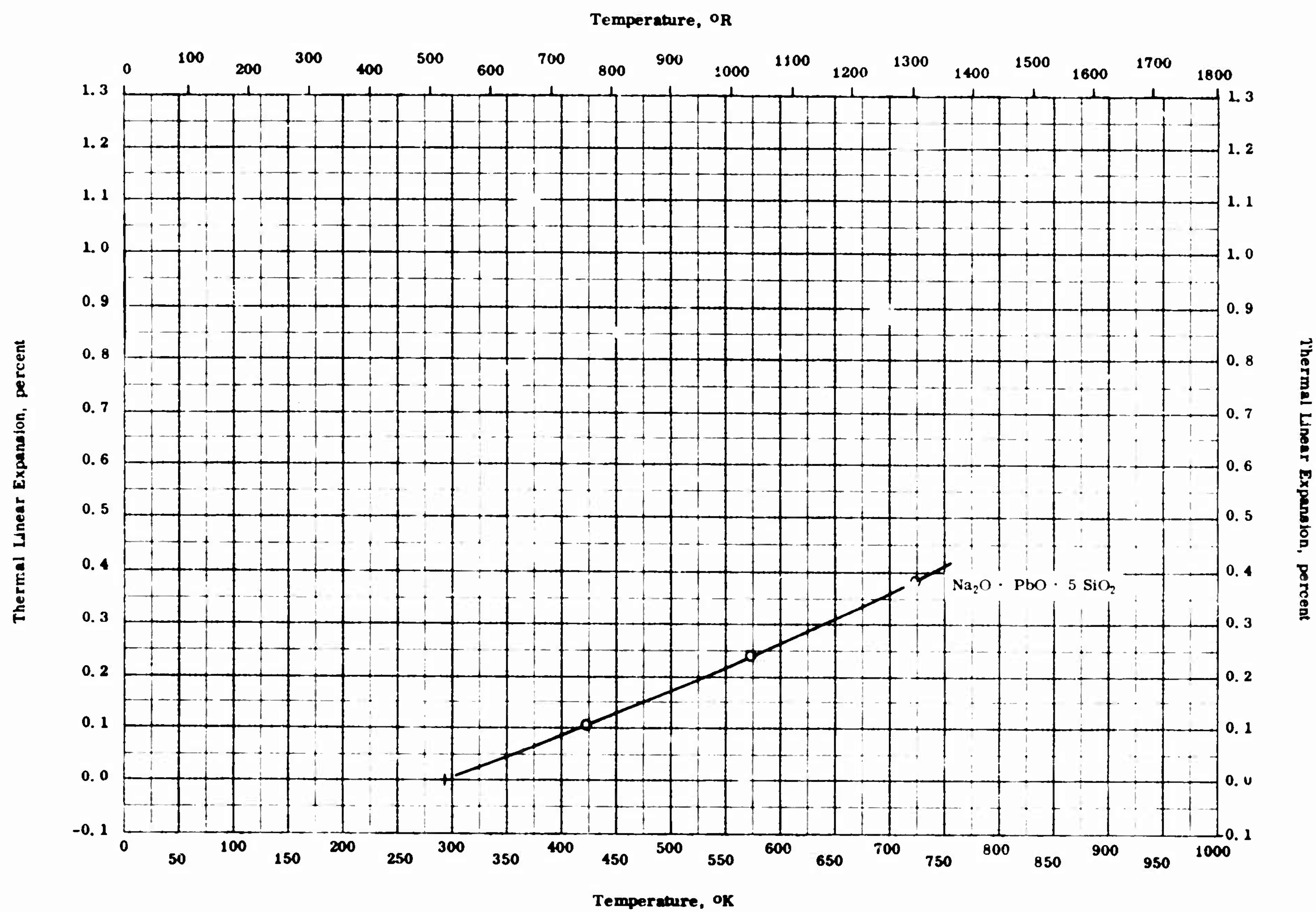


NORMAL SPECTRAL REFLECTANCE — SODIUM CALCIUM SILICATE GLASS

NORMAL SPECTRAL REFLECTANCE -- SODIUM CALCIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	51-22	811	2.5-12.5		Flint container glass; 71.7 SiO_2, 13.3 ($Na_2O + K_2O$), 11.9 CaO, 1.8 R_2O_3, 0.6 BaO and 0.3 MgO; 0.125 in. thickness.	Calculated from transmittance and emittance; data taken from smooth curve.
□	51-22	811	2.5-12.5		Low iron flint glass; 72.2 SiO_2, 13 ($Na_2O + K_2O$), 12.7 CaO, 1.1 R_2O_3 and 0.2 MgO; 0.25 in. thickness.	Same as above.

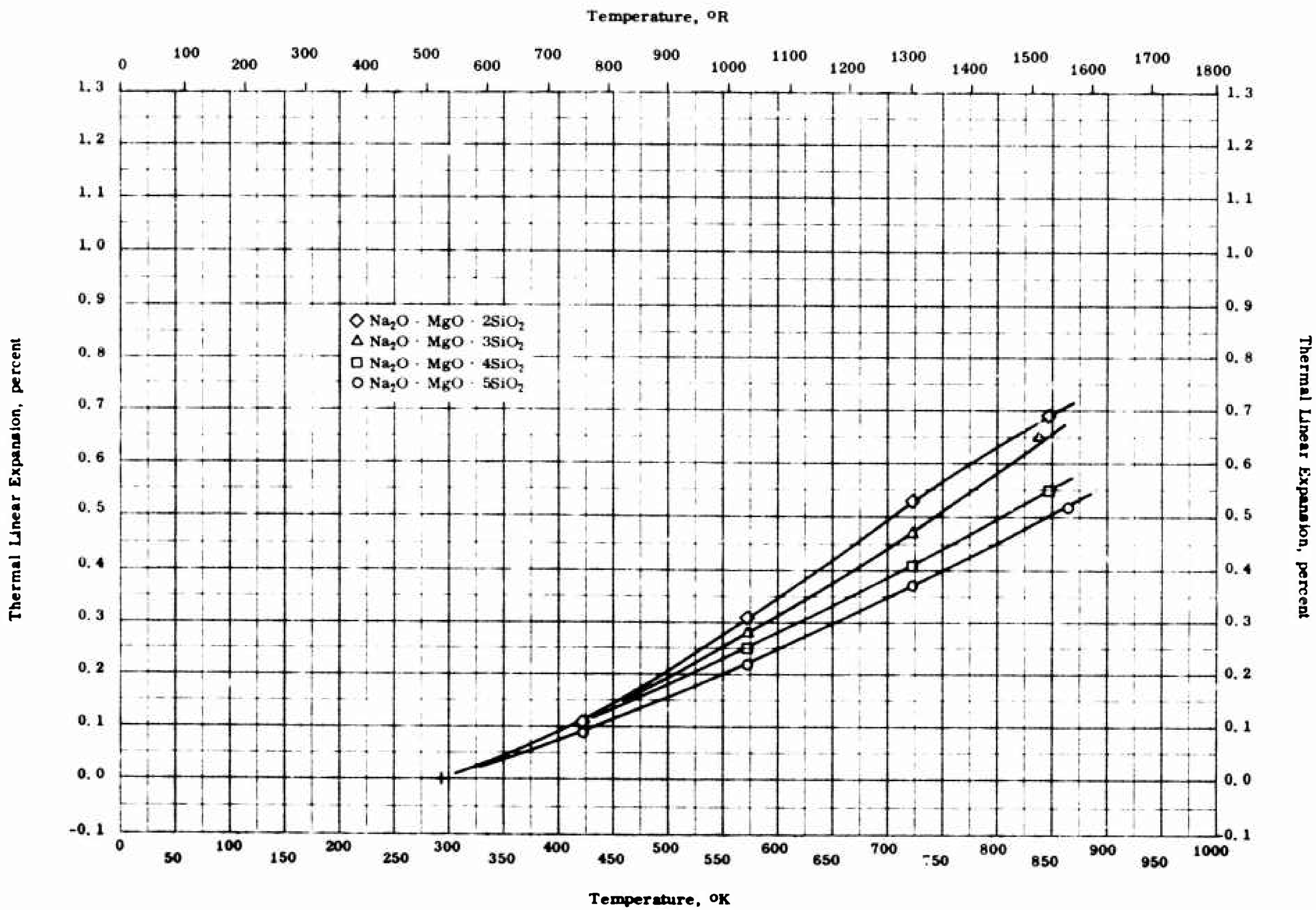


THERMAL LINEAR EXPANSION -- SODIUM LEAD SILICATE GLASS

THERMAL LINEAR EXPANSION -- SODIUM LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
O	52-26	293-723	± 2	$Na_2O \cdot PbO \cdot 5\,SiO_2$; 51.4 SiO_2, 38.0 PbO, and 10.6 Na_2O.	Mixed, melted in kyanite crucible, cast in graphite mold, and annealed; tested at 4 C min^{-1} rise.

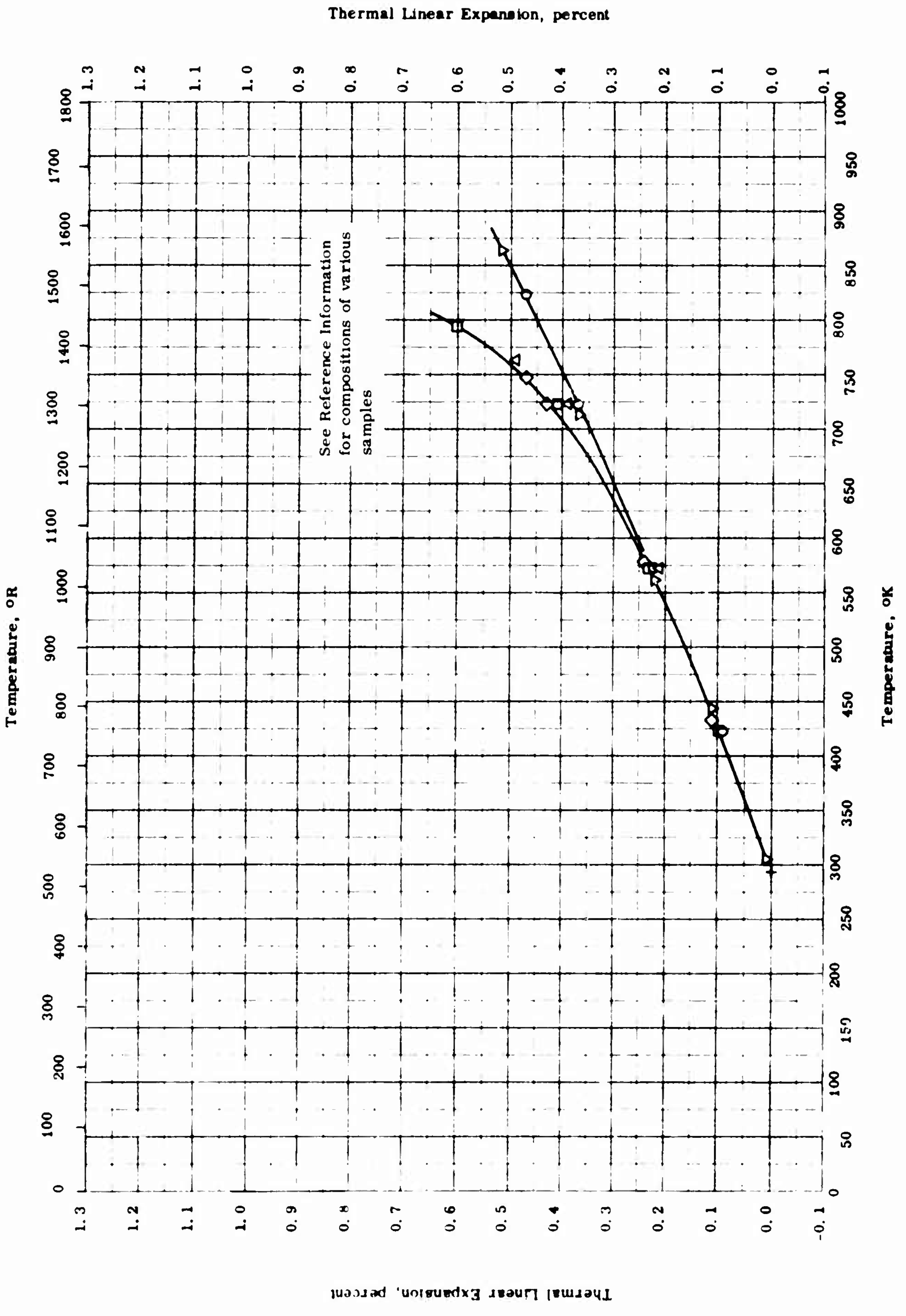


THERMAL LINEAR EXPANSION -- SODIUM MAGNESIUM SILICATF GLASS

THERMAL LINEAR EXPANSION -- SODIUM MAGNESIUM SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept Error %	Sample Specifications	Remarks
○	52-26	293-865	± 2	$Na_2O \cdot MgO \cdot 5\,SiO_2$. 74.6 SiO_2, 15.4 Na_2O, and 10.0 MgO.	Mixed, melted in kyanite crucibles, cast in graphite mold, and annealed; tested at 4 C min^{-1} rise.
□	52-26	293-848	± 2	$Na_2O \cdot MgO \cdot 4\,SiO_2$; 70.1 SiO_2, 18.1 Na_2O, and 11.8 MgO.	Same as above.
△	52-26	293-838	± 2	$Na_2O \cdot MgO \cdot 3\,SiO_2$. 63.8 SiO_2, 21.9 Na_2O, and 14.3 MgO.	Same as above.
◇	52-26	293-848	± 2	$Na_2O \cdot MgO \cdot 2\,SiO_2$, 54.0 SiO_2, 27.9 Na_2O, and 18.1 MgO.	Same as above.

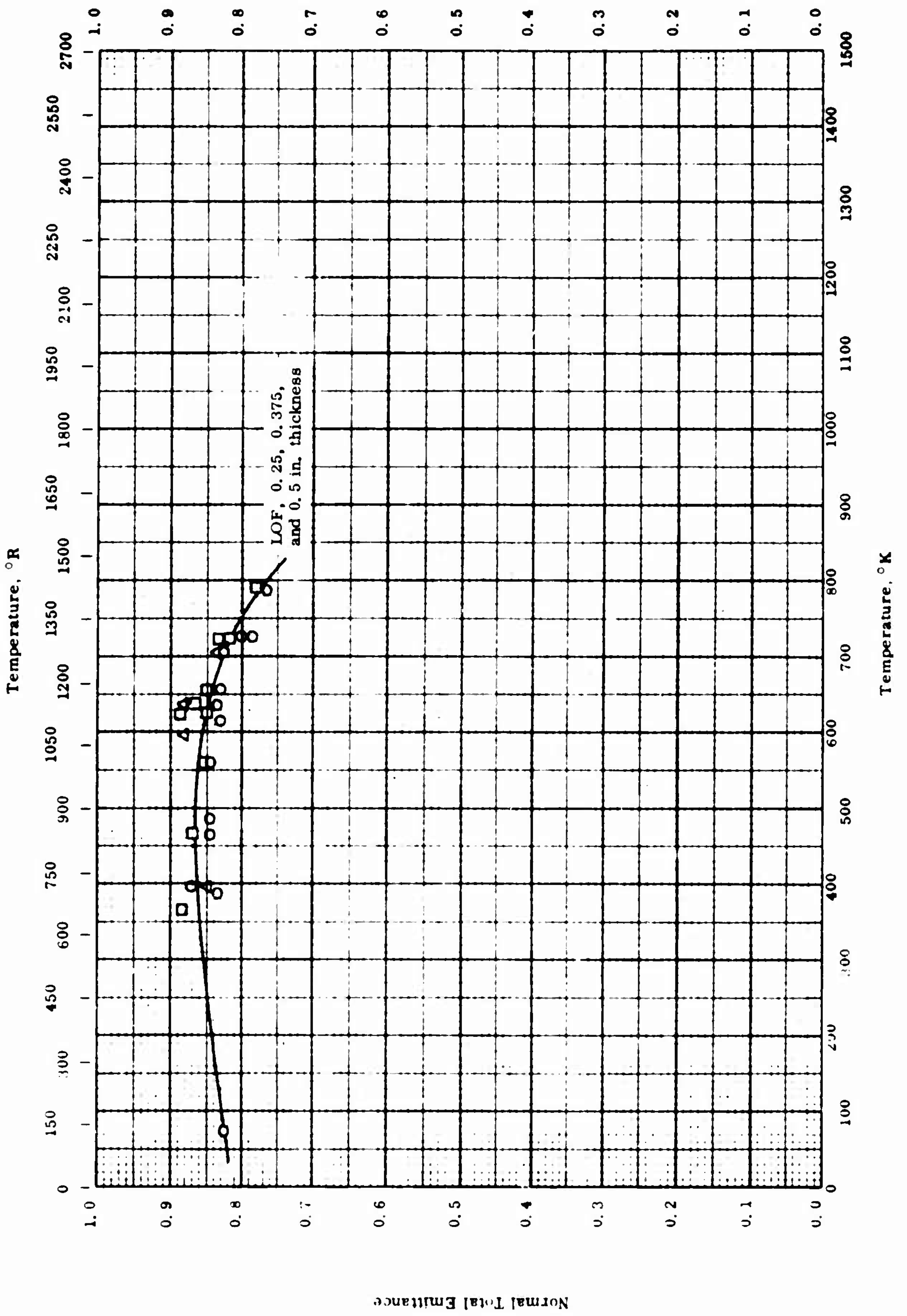


THERMAL LINEAR EXPANSION -- SODIUM MAGNESIUM COPPER SILICATE GLASS

THERMAL LINEAR EXPANSION -- SODIUM MAGNESIUM COPPER SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
▽	52-26	293-864	± 2	$Na_2O \cdot MgO \cdot 5\ SiO$; 74.6 SiO_2, 15.4 Na_2O, and 10.0 MgO.	Mixed, melted in kyanite crucibles, cast in graphite mold, and annealed; tested at 4 C min^{-1} rise.
○	52-26	293-823	± 2	$Na_2O \cdot 0.75\ MgO \cdot 0.25\ CuO \cdot 5\ SiO_2$; 72.8 SiO_2, 15.0 Na_2O, 7.4 MgO, and 4.8 CuO.	Same as above.
□	52-26	293-793	± 2	$Na_2O \cdot 0.5\ MgO \cdot 0.5\ CuO \cdot 5\ SiO_2$; 71.1 SiO_2, 14.7 Na_2O, 9.4 CuO, and 4.8 MgO.	Same as above.
△	52-26	293-763	± 2	$Na_2O \cdot 0.25\ MgO \cdot 0.75\ CuO \cdot 5\ SiO_2$; 69.68 SiO_2, 14.40 Na_2O, 13.58 CuO, and 2.34 MgO.	Same as above.
◇	52-26	293-747	± 2	$Na_2O \cdot CuO \cdot 5\ SiO_2$; 68.94 SiO_2, 18.0 CuO, and 14.1 Na_2O.	Same as above.

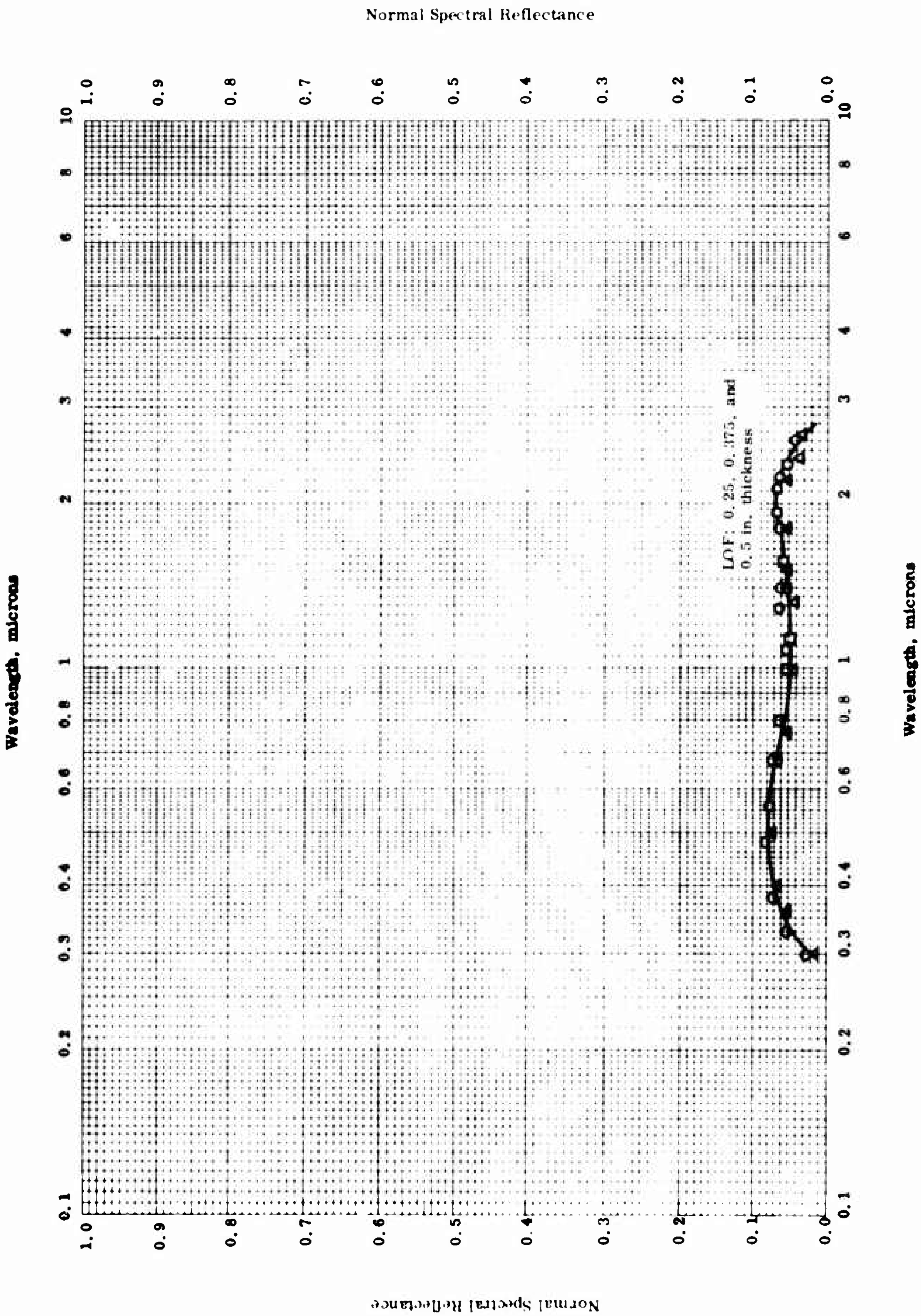


NORMAL TOTAL EMITTANCE -- SODA LIME GLASS

NORMAL TOTAL EMITTANCE -- SODA LIME GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-15	72-789		Soda lime glass LOF; 0.25 in. thickness.	
□	59-15	75-791		Same as above; 0.375 in. thickness.	
△	59-15	72-789		Same as above; 0.5 in. thickness.	

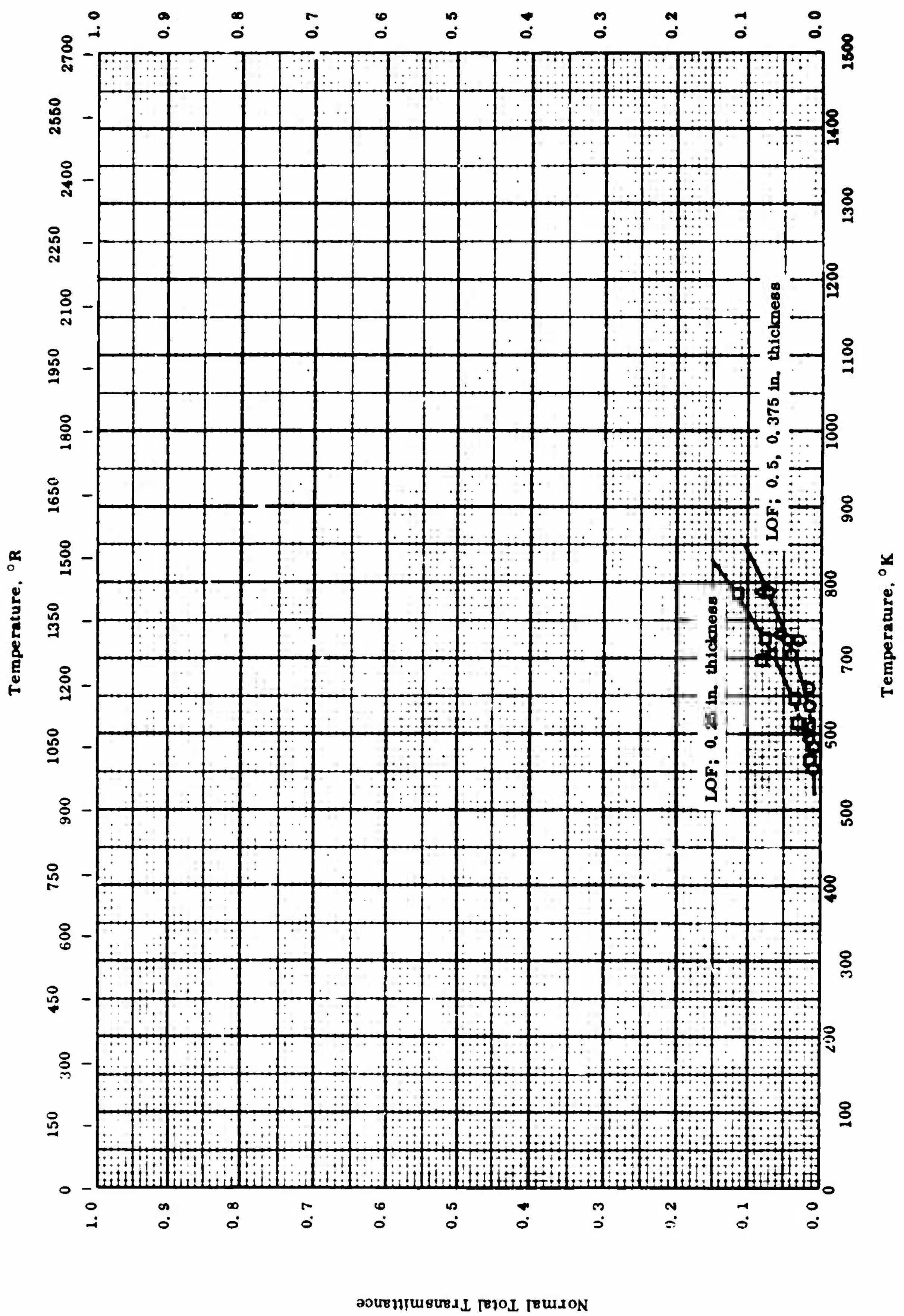


NORMAL SPECTRAL REFLECTANCE -- SODA LIME GLASS

NORMAL SPECTRAL REFLECTANCE -- SODA LIME GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	59-15	298	0.3-2.68	4	Soda lime glass LOF, 0.25 in. thickness.	Data taken from smooth curve; 6° - 9° incidence, hemispherical viewing; $MgCO_3$ as reference standard.
□	59-15	298	0.68-2.31	4	Same as above, 0.375 in. thickness.	Same as above.
△	59-15	298	0.3-2.68	4	Same as above, 0.5 in. thickness.	Same as above.

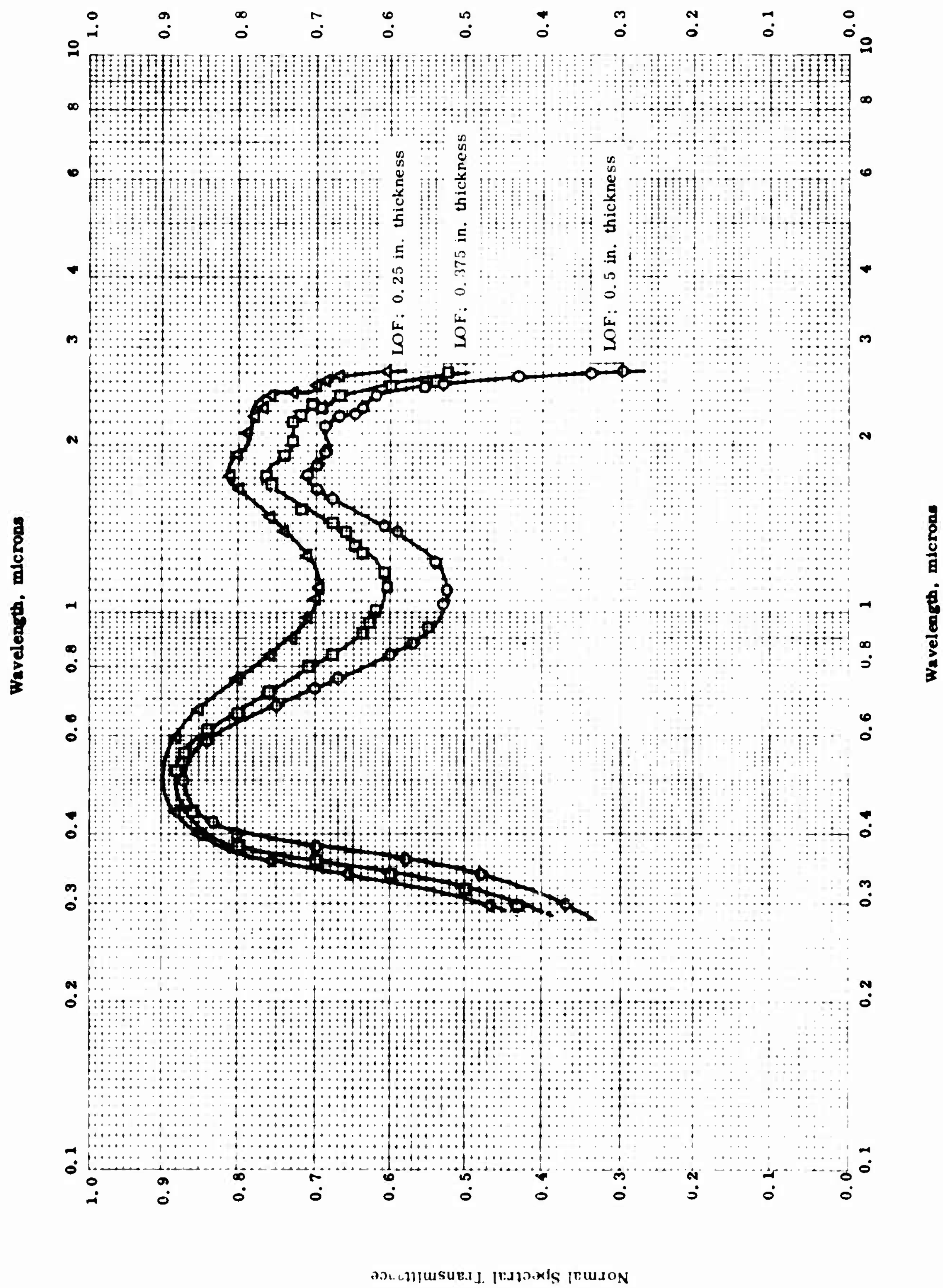


NORMAL TOTAL TRANSMITTANCE -- SODA LIME GLASS

NORMAL TOTAL TRANSMITTANCE -- SODA LIME GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-15	553-789		Soda lime glass LOF: 0.5 in. thickness.	Reasonably flat parallel slab.
□	59-15	566-786		Same as above; 0.25 in. thickness.	Same as above.
△	59-15	555-789		Same as above: 0.375 in. thickness.	Same as above.

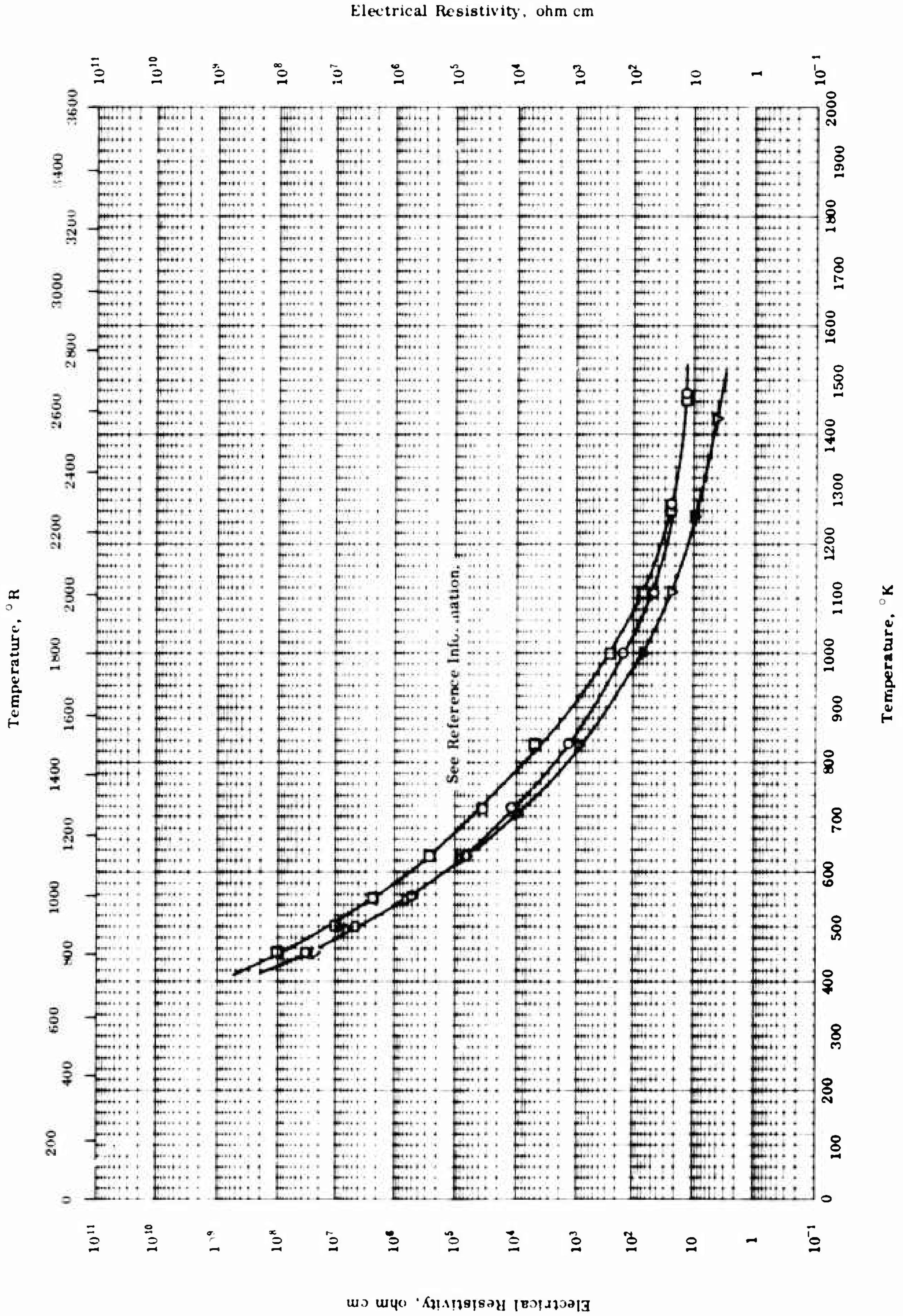


NORMAL SPECTRAL TRANSMITTANCE -- SODA LIME GLASS

NORMAL SPECTRAL TRANSMITTANCE -- SODA LIME GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	59-15	298	0.3-2.7		Soda lime glass LOF, 0.5 in. thickness.	Reasonably flat parallel slab; data taken from smooth curve.
□	59-15	298	0.3-2.7		Same as above; 0.375 in. thickness.	Same as above.
△	59-15	298	0.3-2.7		Same as above. 0.25 in. thickness.	Same as above.



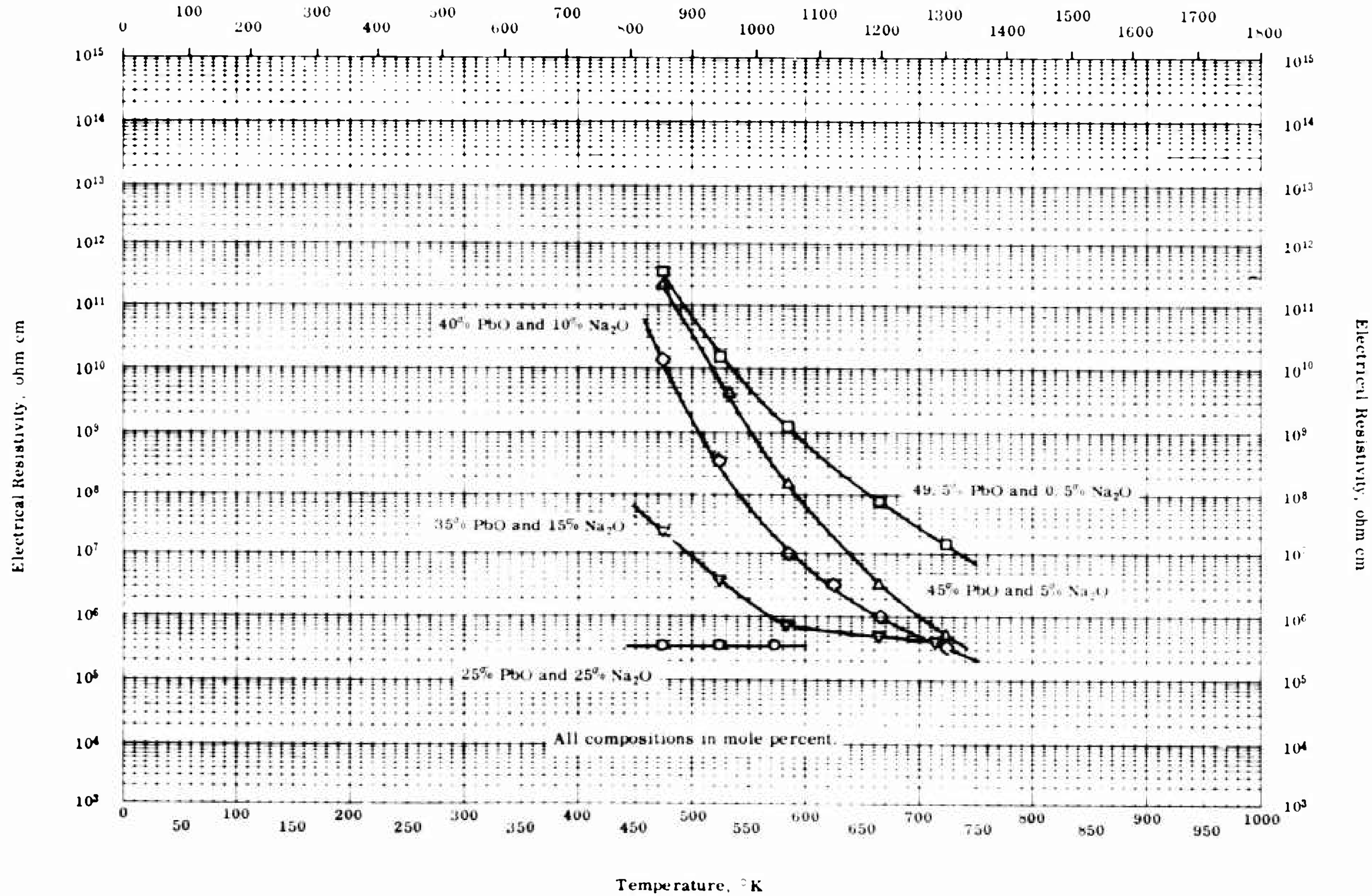
ELECTRICAL RESISTIVITY -- SODA LIME ALUMINOSILICATE GLASS

ELECTRICAL RESISTIVITY -- SODA LIME ALUMINOSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	57-18	455-1473		75.77 SiO_2, 12.43 Na_2O, 7.36 CaO, 4.33 Al_2O_3 and 0.25 MgO; before melting.	Melted from chemically pure materials in fire clay single liter crucibles in petroleum furnace.
□	57-18	455-1428		74.0 SiO_2, 13.0 Na_2O, 11.0 CaO and 2.0 Al_2O_3, before melting	Same as above.
▽	57-18	455-1428		72.0 SiO_2, 17.0 Na_2O, 7.0 CaO and 2.0 ea. Al_2O_3, MgO, before melting.	Same as above, auth. reports additional detailed data for system, 72-76 SiO_2, 12.4-17 Na_2O, 7-10 CaO, 2-4.3 Al_2O_3, 0.2 MgO, only extreme ranges of resistivity are shown here.

Temperature, °R



ELECTRICAL RESISTIVITY -- SODIUM LEAD SILICATE GLASS

ELECTRICAL RESISTIVITY -- SODIUM LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	53-18, 53-23, also 56-12	476-725		50% SiO_2, 49.5% PbO, and 0.5% Na_2O (Mole %).	
△	53-18, 53-23, also 56-12	476-725		50% SiO_2, 45% PbO, and 5% Na_2O (Mole %).	
◇	53-18, 53-23, also 56-12	476-725		50% SiO_2, 40% PbO, and 10% Na_2O (Mole %).	
▽	53-18, 53-23, also 56-12	476-725		50% SiO_2, 35% PbO, and 15% Na_2O (Mole %).	
○	53-18, 53-23, also 56-12	476-570		50% SiO_2, 25% PbO, and 25% Na_2O (Mole %).	Authors report additonal detailed data for system (1-0.2)PbO: (0-0.8)Na_2O: 1.0 SiO_2.

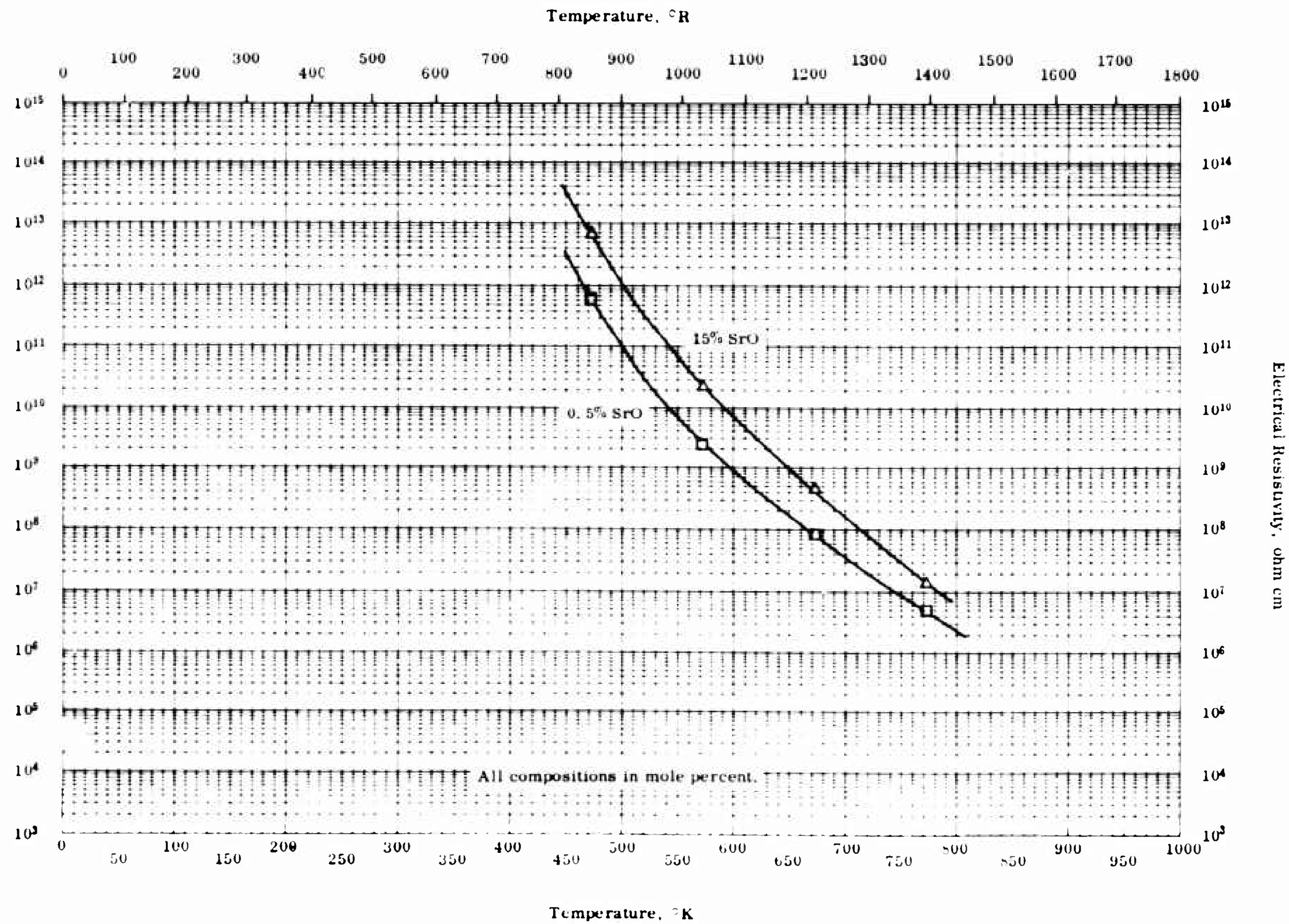
THERMAL LINEAR EXPANSION -- SODIUM STRONTIUM ALUMINOSILICATE GLASS

	Material Composition					Density	Coefficient of linear expansion x 10^6	
Symbol	SiO_2	Na_2O	SrO	Al_2O_3	SO_3	g cm^{-3}	298 K	536 R
o	77.7	13.9	6.1	2.1	0.1	2.4488	84.6	47.0
	77.7	13.8	8.2	0.2	0.1	2.4754	86.3	47.9
	76.1	15.8	6.1	2.0	0.2	2.4673	90.9	50.5
	76.0	15.4	8.1	0.2	0.2	2.4955	93.2	51.8
	75.4	14.2	6.1	4.0	0.1	2.4643	82.0	45.6
	74.8	17.2	4.0	4.0	0.2	2.4520	92.4	51.3
	74.7	17.1	6.0	2.0	0.2	2.4798	96.6	53.7
	74.3	15.5	6.1	4.1	0.2	2.4776	90.4	50.2
	74.1	17.3	7.9	0.3	0.2	2.5110	100.6	55.9
	73.5	14.1	10.0	2.0	0.2	2.5257	88.3	49.1
	73.5	13.9	12.0	0.3	0.1	2.5571	90.8	50.4
	72.2	15.5	10.1	2.1	0.1	2.5456	95.5	53.1
	71.9	15.7	12.2	0.1	0.1	2.5777	98.2	54.6
	71.5	14.2	10.0	4.1	0.2	2.5380	86.7	48.2
	70.7	17.0	11.9	0.1	0.2	2.5866	105.2	58.4
	70.6	17.2	8.0	4.0	0.2	2.5357	97.5	54.2
	70.5	17.3	10.1	2.0	0.2	2.5569	101.5	56.4
	70.1	15.5	10.1	4.1	0.1	2.5543	94.9	52.7
	69.6	14.1	13.9	2.0	0.2	2.6085	94.5	52.5
	69.5	14.0	16.0	0.2	0.2	2.6392	95.1	50.4
	68.0	15.8	16.0	0.1	0.2	2.6585	104.2	57.9
	68.0	15.7	14.0	2.0	0.2	2.6247	102.0	56.7
	67.9	14.2	13.9	4.1	0.2	2.6165	92.4	51.3
	66.6	17.3	15.6	0.2	0.2	2.6686	111.2	61.8
	66.6	17.3	13.6	2.1	0.2	2.6362	107.2	59.6
	66.8	17.2	11.7	4.0	0.2	2.6059	104.8	58.2
	66.1	15.5	14.0	4.1	0.2	2.6329	101.9	56.6

THERMAL LINEAR EXPANSION -- SODIUM STRONTIUM ALUMINOSILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	48-10	298		Series of glasses.	

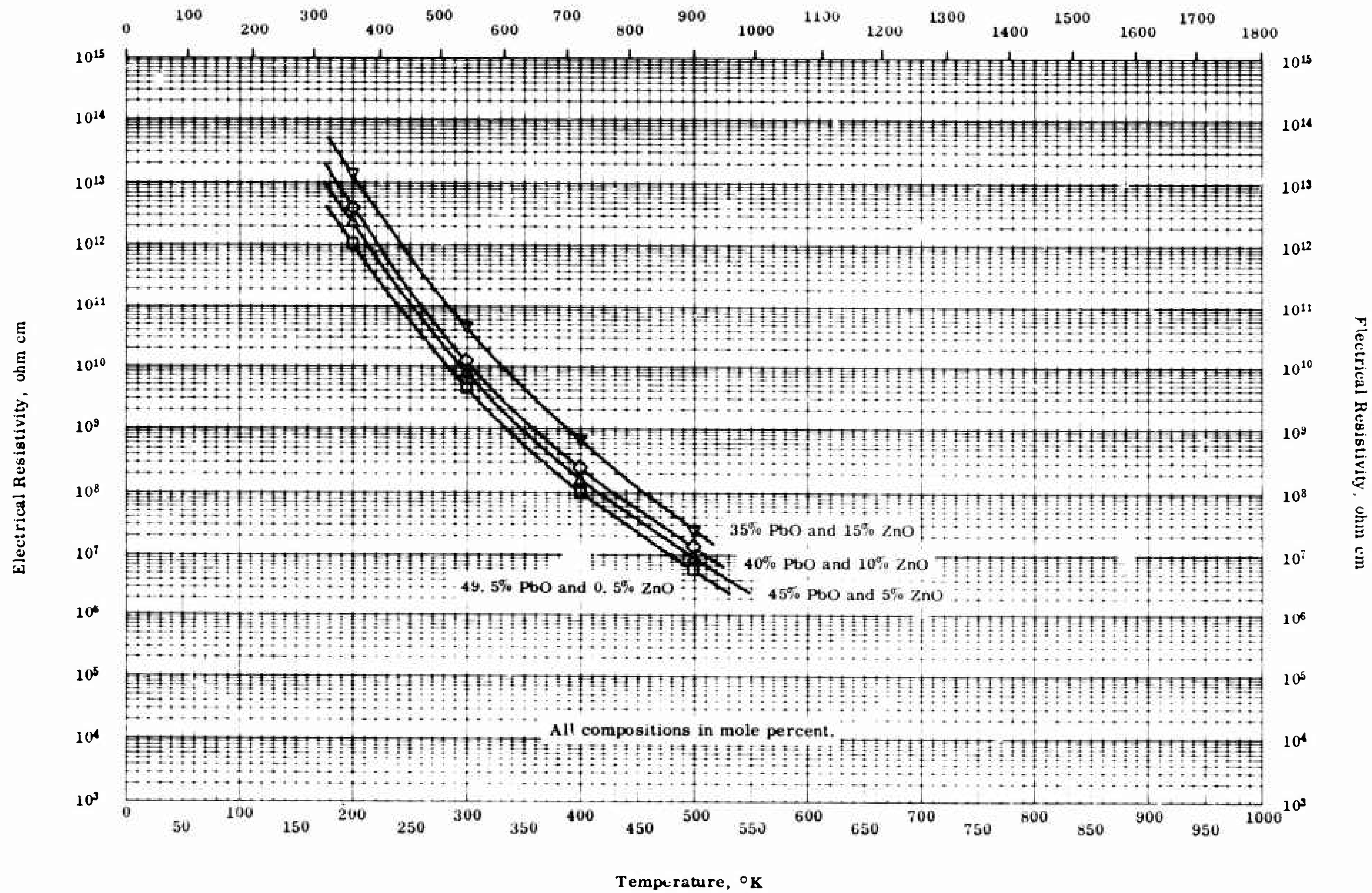


ELECTRICAL RESISTIVITY -- STRONTIUM LEAD SILICATE GLASS

ELECTRICAL RESISTIVITY -- STRONTIUM LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	53-24 also 56-12	473-773		50.0% SiO_2, 49.5% PbO, and 0.5% SrO (Mole %).	Ground from reagent grade materials, melted, cast, annealed overnight, ground flat; heated at 10 C min^{-1}.
△	53-24 also 56-12	473-773		50% SiO_2, 35% PbO, and 15% SrO (Mole %).	Same as above.

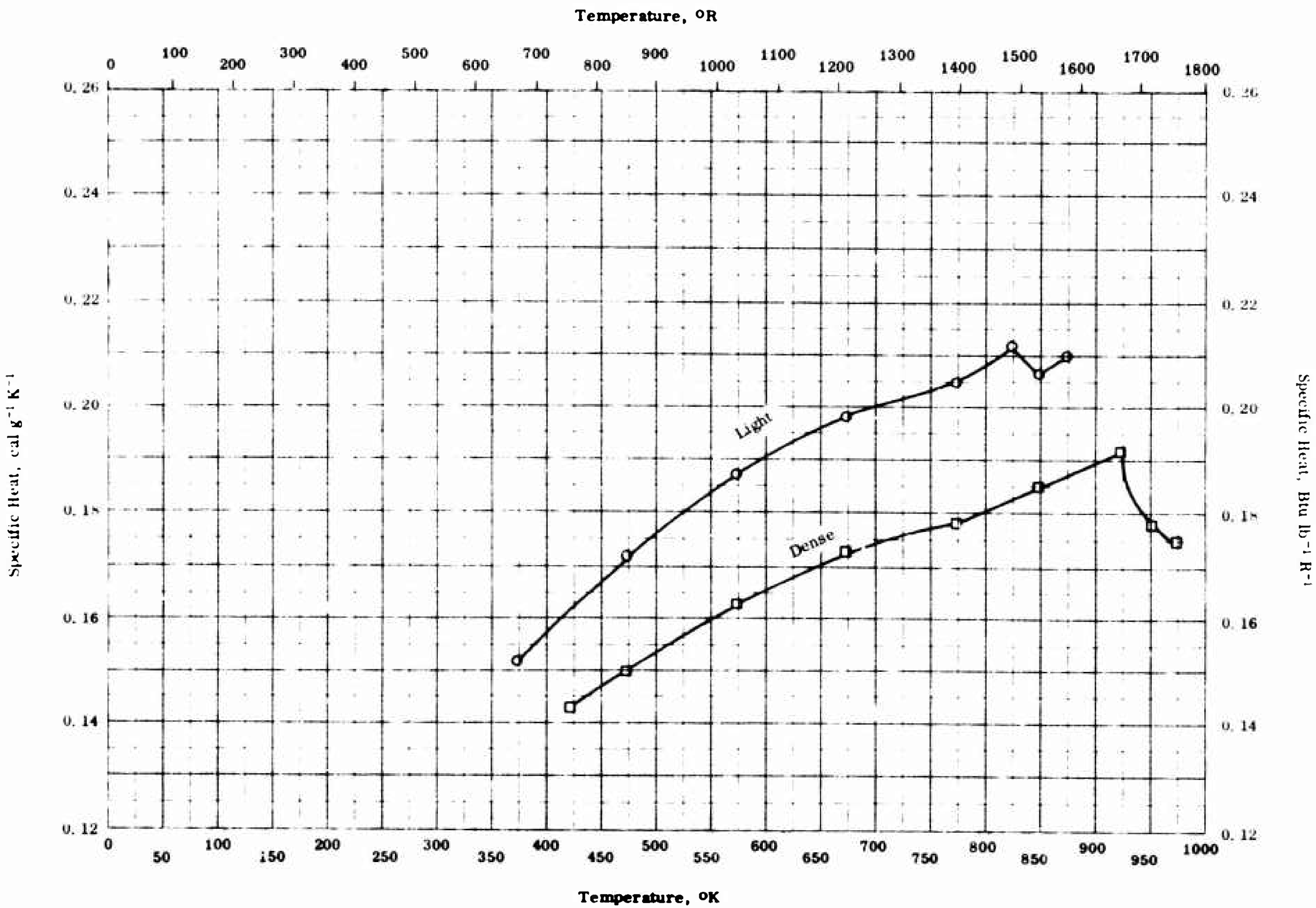


ELECTRICAL RESISTIVITY -- ZINC LEAD SILICATE GLASS

ELECTRICAL RESISTIVITY -- ZINC LEAD SILICATE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
□	53-24	200-500		50.0% SiO_2, 49.5% PbO, and 0.5% ZnO (Mole %).	
△	53-24	200-500		50% SiO_2, 45% PbO, and 5% ZnO (Mole %).	
◇	53-24	200-500		50% SiO_2, 40% PbO, and 10% ZnO (Mole %).	
▽	53-24	200-500		50% SiO_2, 35% PbO, and 15% ZnO (Mole %).	

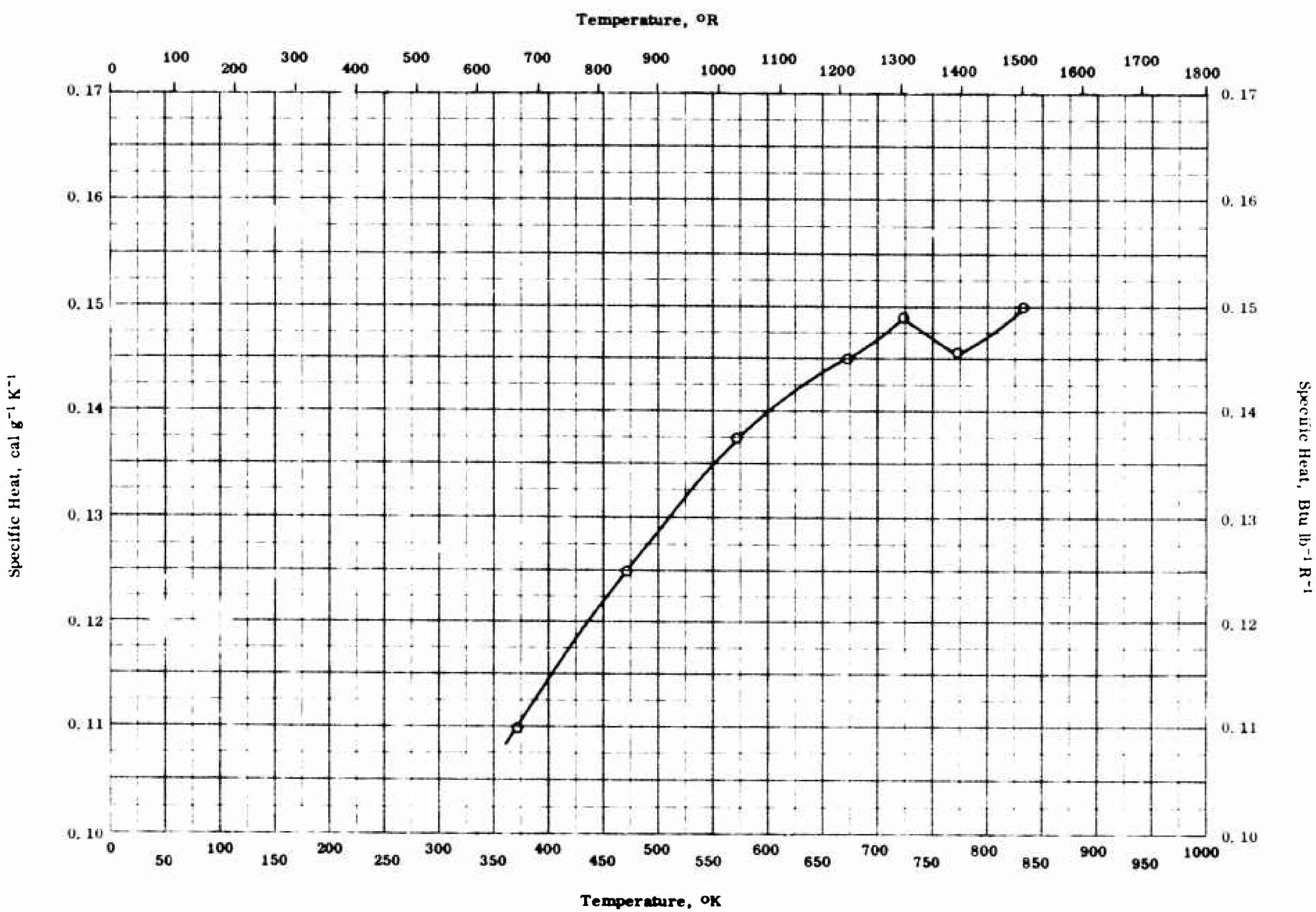


SPECIFIC HEAT -- BARIUM CROWN GLASS

SPECIFIC HEAT -- BARIUM CROWN GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-22	373-873		Light barium crown glass.	Author believed second order transformation at 550 C.
□	55-22	423-963		Dense barium crown glass.	Author believed second order transformation at 650 C.

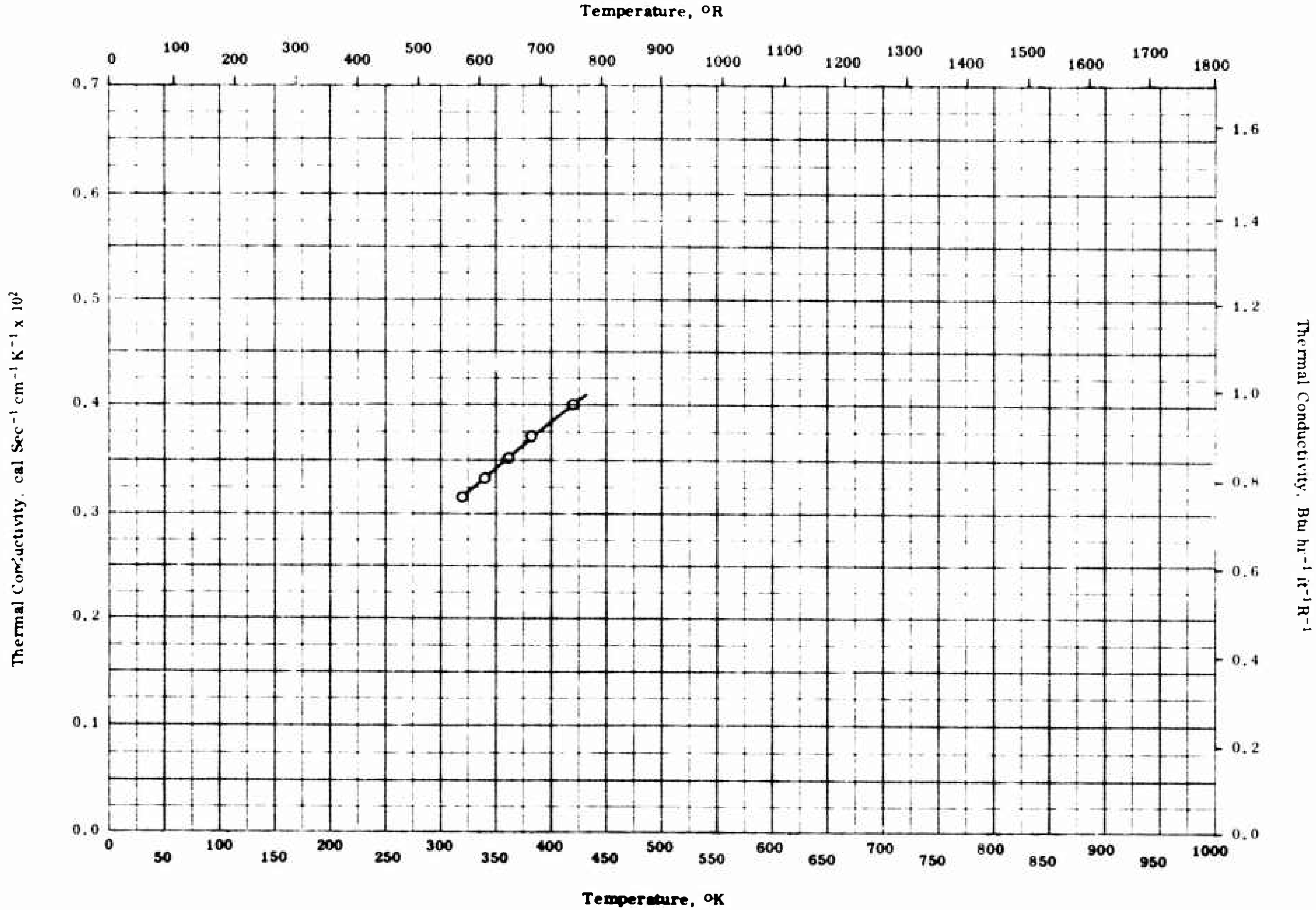


SPECIFIC HEAT -- DENSE FLINT GLASS

SPECIFIC HEAT -- DENSE FLINT GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	55-22	373-833		Very dense flint glass.	

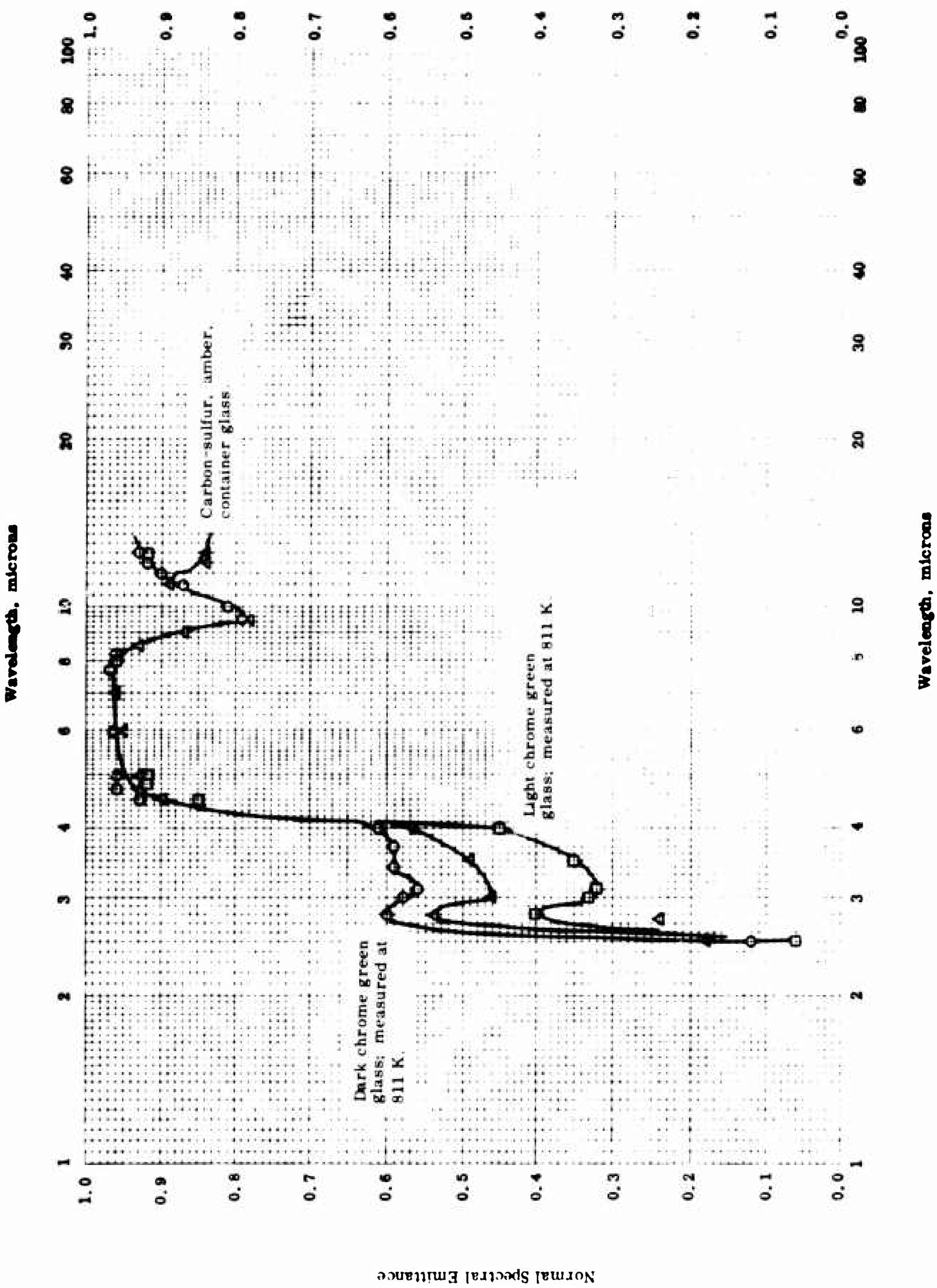


THERMAL CONDUCTIVITY -- LIME WINDOW ASS

THERMAL CONDUCTIVITY -- LIME WINDOW GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	53-3	320-422		American Ceramic Society Standard Glass; density 155 lb ft^{-3}.	Pt alloy glaze for ceramic to metal bond.

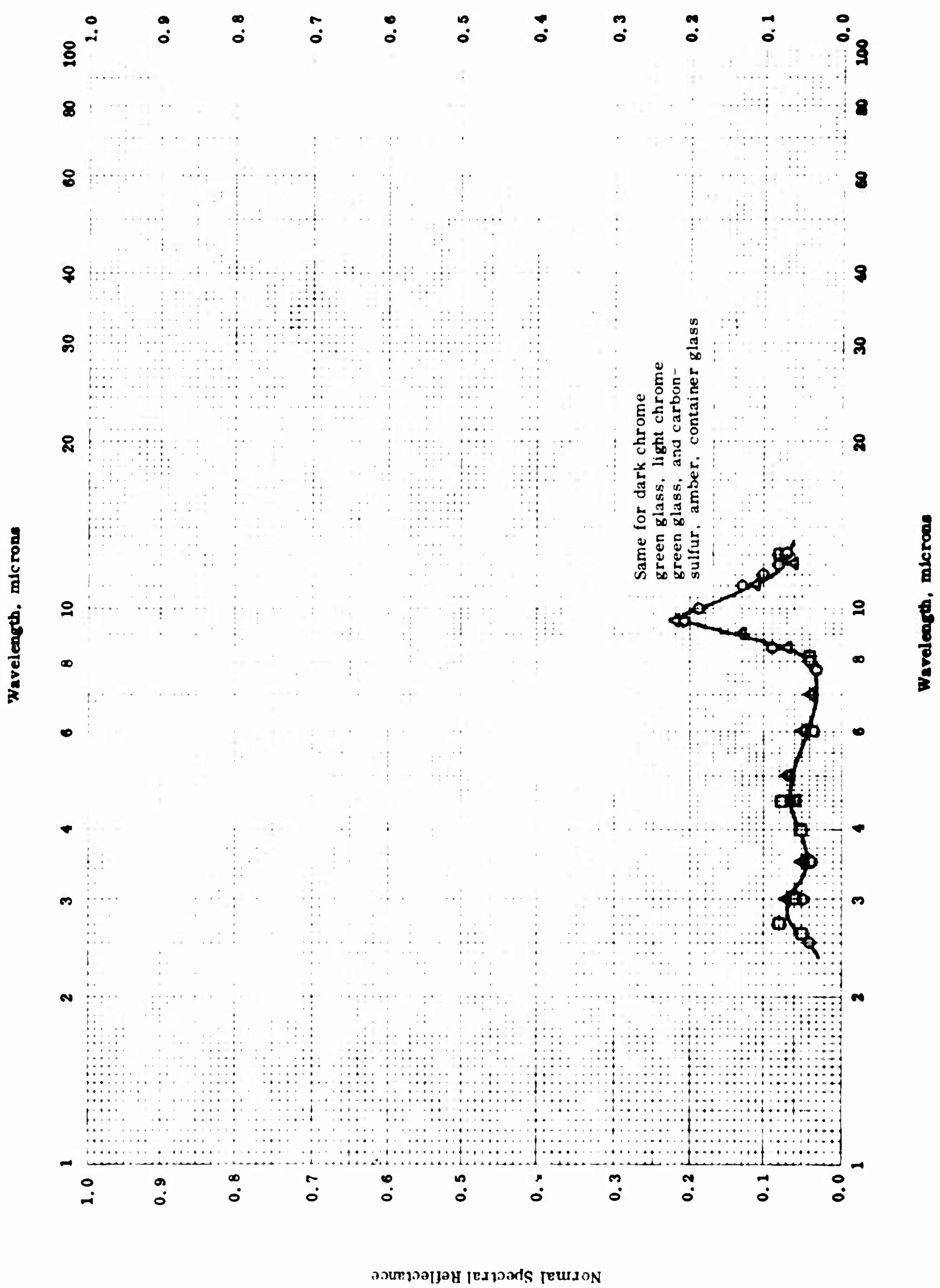


NORMAL SPECTRAL EMITTANCE -- CONTAINER GLASS

NORMAL SPECTRAL EMITTANCE -- CONTAINER GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. ° K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	51-22	811	2.5-12.5		Dark chrome green glass; 70.9 SiO_2, 16.6 (Na_2O + K_2O), 6.7 CaO, 3.6 MgO, 1.5 R_2O_3 and 0.5 BaO; 0.0625 in. thickness.	Data taken from smooth curve.
□	51-22	811	2.5-12.5		Light chrome green glass; 71 SiO_2, 13.1 (Na_2O + K_2O), 11.2 CaO, 2.8 MgO, and 1.3 R_2O_3; 0.0625 in. thickness.	Same as above.
△	51-22	811	2.5-12.5		Carbon-sulfur, amber, container glass; 71.4 SiO_2, 14.8 (Na_2O + K_2O), 11.6 CaO, 2 R_2O_3 and 0.2 MgO; 0.0625 in. thickness.	Same as above.

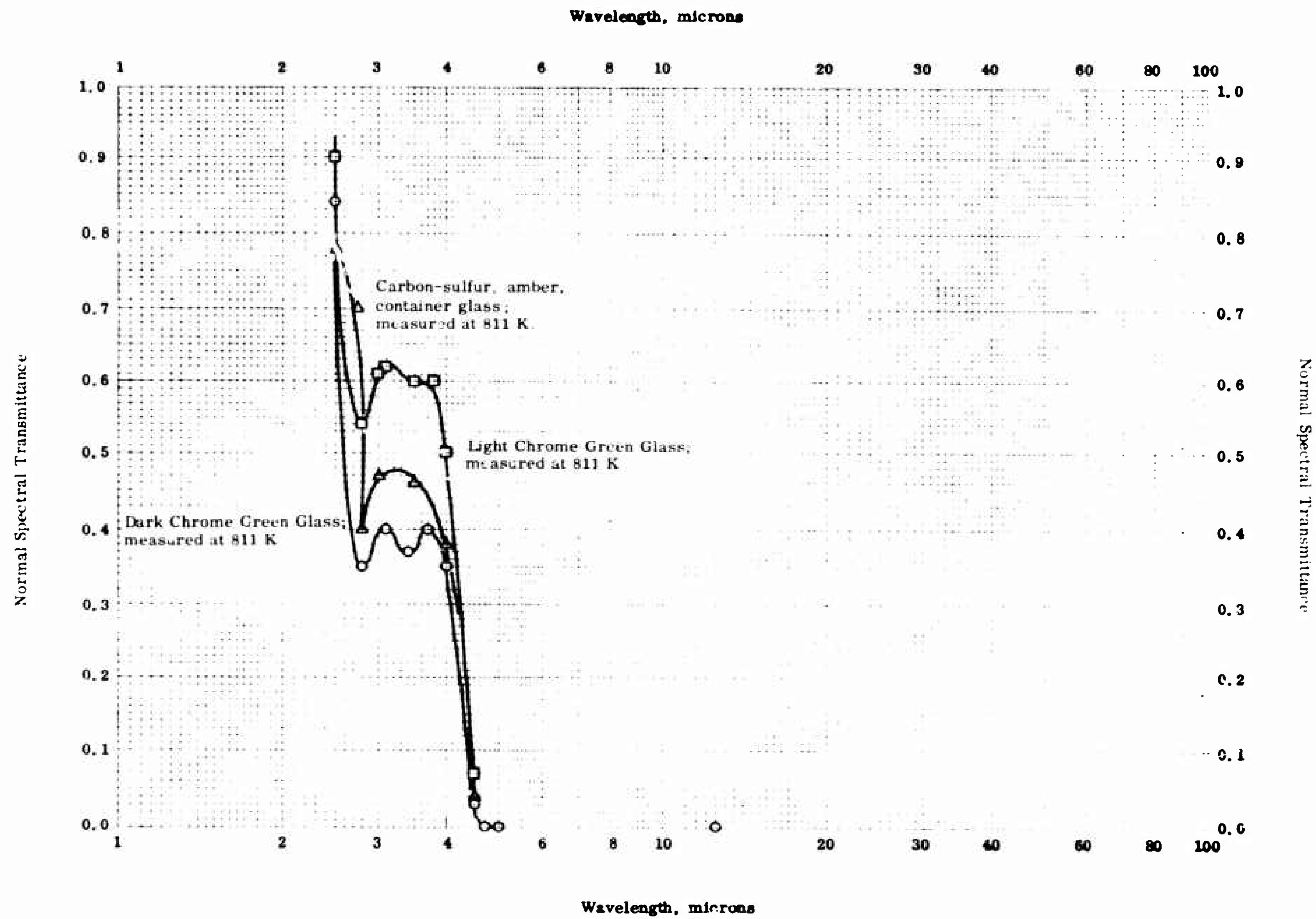


NORMAL SPECTRAL REFLECTANCE -- CONTAINER GLASS

NORMAL SPECTRAL REFLECTANCE -- CONTAINER GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	51-22	811	2.5-12.5		Dark chrome green glass; 70.9 SiO_2, 16.6 ($Na_2O + K_2O$), 6.7 CaO, 3.6 MgO, 1.5 R_2O_3 and 0.5 BaO; 0.0625 in. thickness.	Data taken from smooth curve; calculated from emittance and transmittance.
□	51-22	811	2.5-12.5		Light chrome green glass; 71 SiO_2, 13.1 ($Na_2O + K_2O$), 11.2 CaO, 2.8 MgO, and 1.3 R_2O_3; 0.0625 in. thickness.	Same as above.
△	51-22	811	2.5-12.5		Carbon-sulfur, amber, container glass; 71.4 SiO_2, 14.8 ($Na_2O + K_2O$), 11.6 CaO, 2 R_2O_3 and 6.2 MgO; 0.0625 in. thickness.	Same as above.

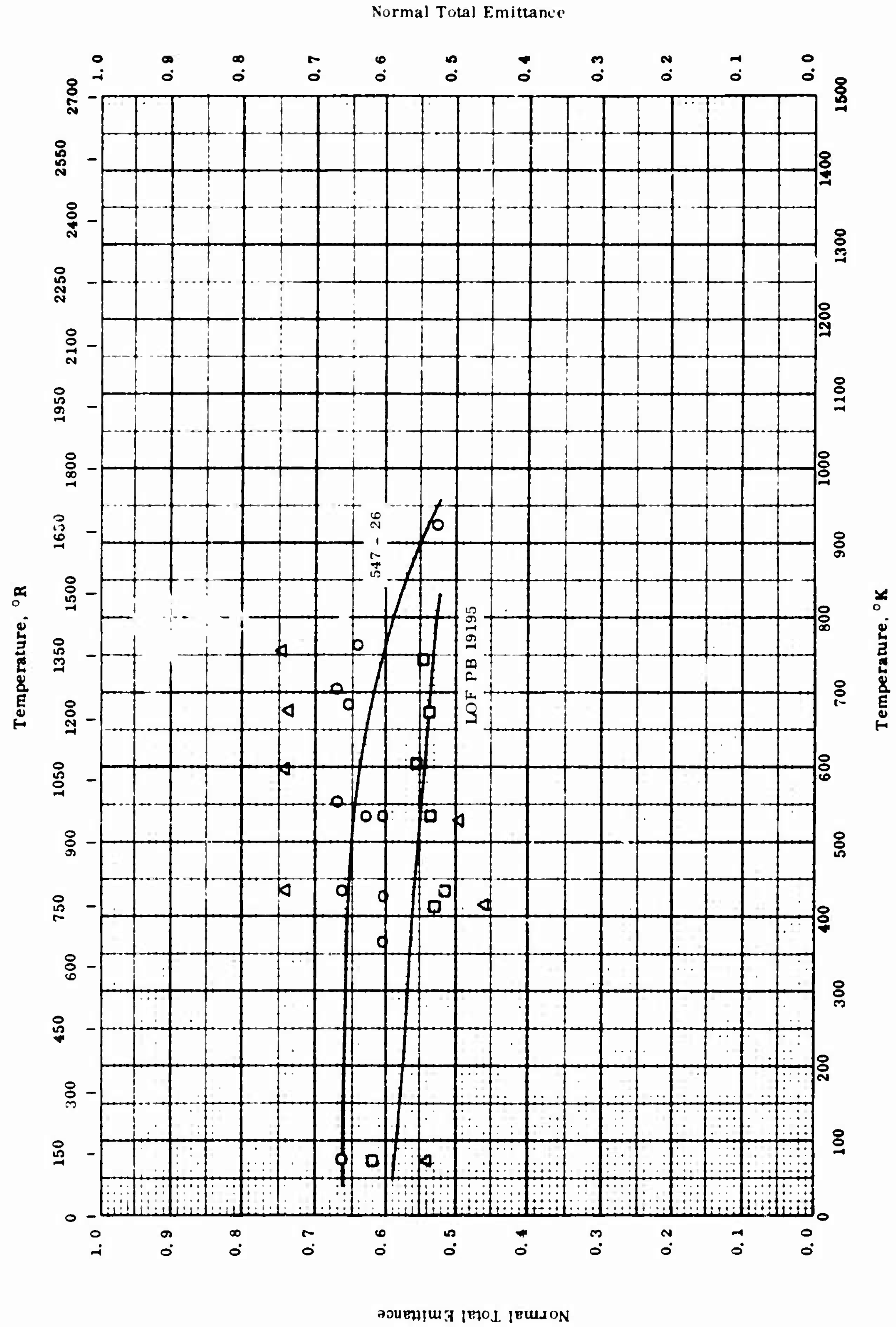


NORMAL SPECTRAL TRANSMITTANCE -- CONTAINER GLASS

NORMAL SPECTRAL TRANSMITTANCE -- CONTAINER GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	51-22	811	2.5-12.5		Dark chrome green glass; 70.9 SiO_2, 16.6 ($Na_2O + K_2O$), 6.7 CaO, 3.6 MgO, 1.5 R_2O_3, and 0.5 BaO; 0.0625 in. thickness.	Data taken from smooth curve.
□	51-22	811	2.5-12.5		Light chrome green glass; 71 SiO_2, 13.1 ($Na_2O + K_2O$), 11.2 CaO, 2.8 MgO, and 1.3 R_2O_3; 0.0625 in. thickness.	Same as above.
△	51-22	811	2.5-12.5		Carbon-sulfur, amber, container glass; 71.4 SiO_2, 14.8 ($Na_2O + K_2O$), 11.6 CaO, 2 R_2O_3 and 0.2 MgO; 0.0625 in. thickness.	Same as above.

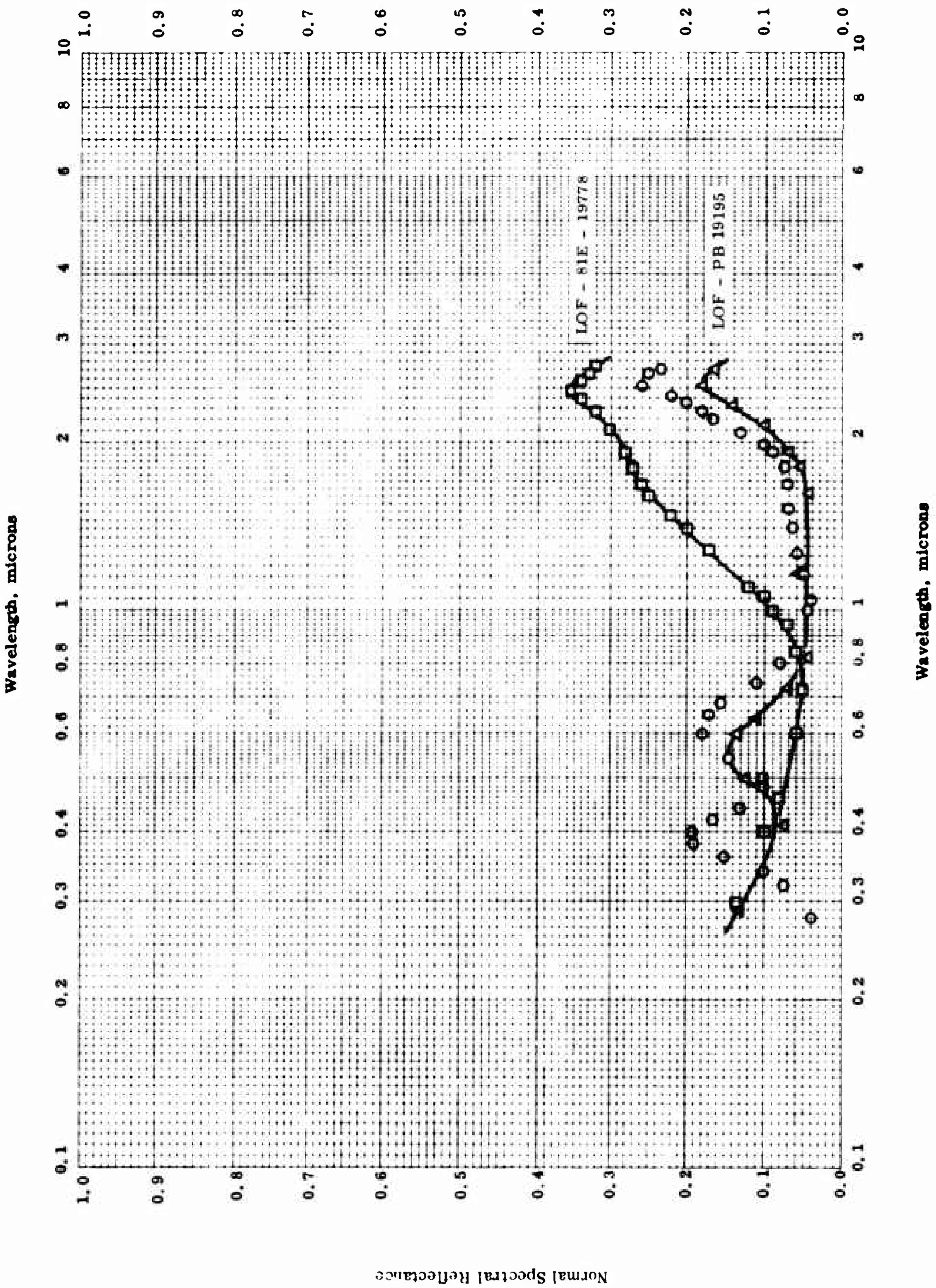


NORMAL TOTAL EMITTANCE -- ELECTROCONDUCTING GLASS

NORMAL TOTAL EMITTANCE -- ELECTROCONDUCTING GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-15	77-922		Electroconducting glass 547-26.	
△	59-15	72-753		Electroconducting glass LOF 81E 19778.	
□	59-15	72-744		Electroconducting glass LOF PB 19195.	

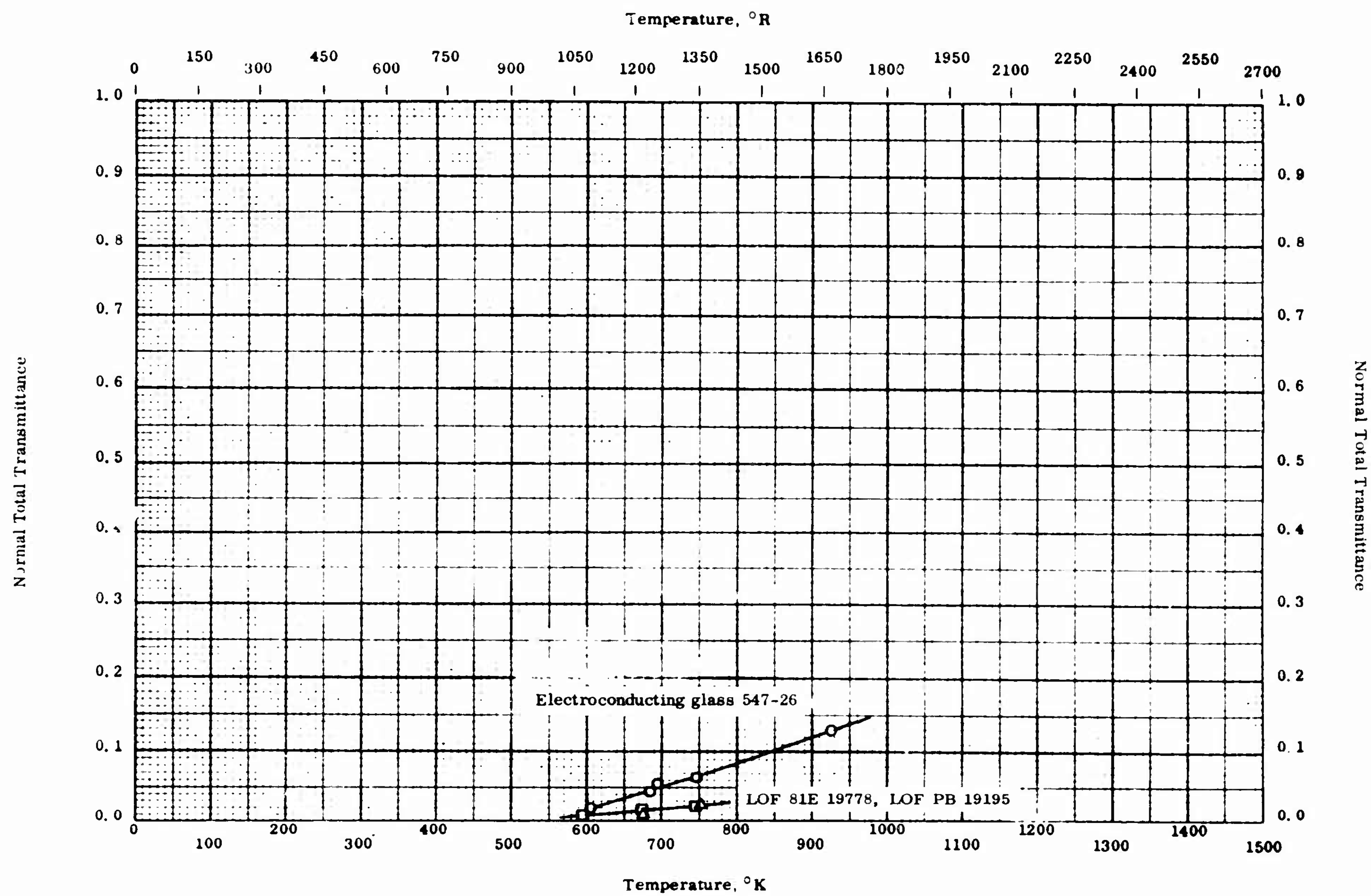


NORMAL SPECTRAL REFLECTANCE -- ELECTROCONDUCTING GLASS

NORMAL SPECTRAL REFLECTANCE -- ELECTROCONDUCTING GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	59-15	298	0.28-2.7	4	Electroconducting glass 547-26	Data taken from smooth curve; 6° - 9° incidence, hemispherical viewing; $MgCO_3$ as reference standard.
□	59-15	298	0.3-2.71	4	Electroconducting glass LOF - 81E - 19778.	Same as above.
△	59-15	298	0.29-2.7	4	Electroconducting glass LOF - PB 19195	Same as above.

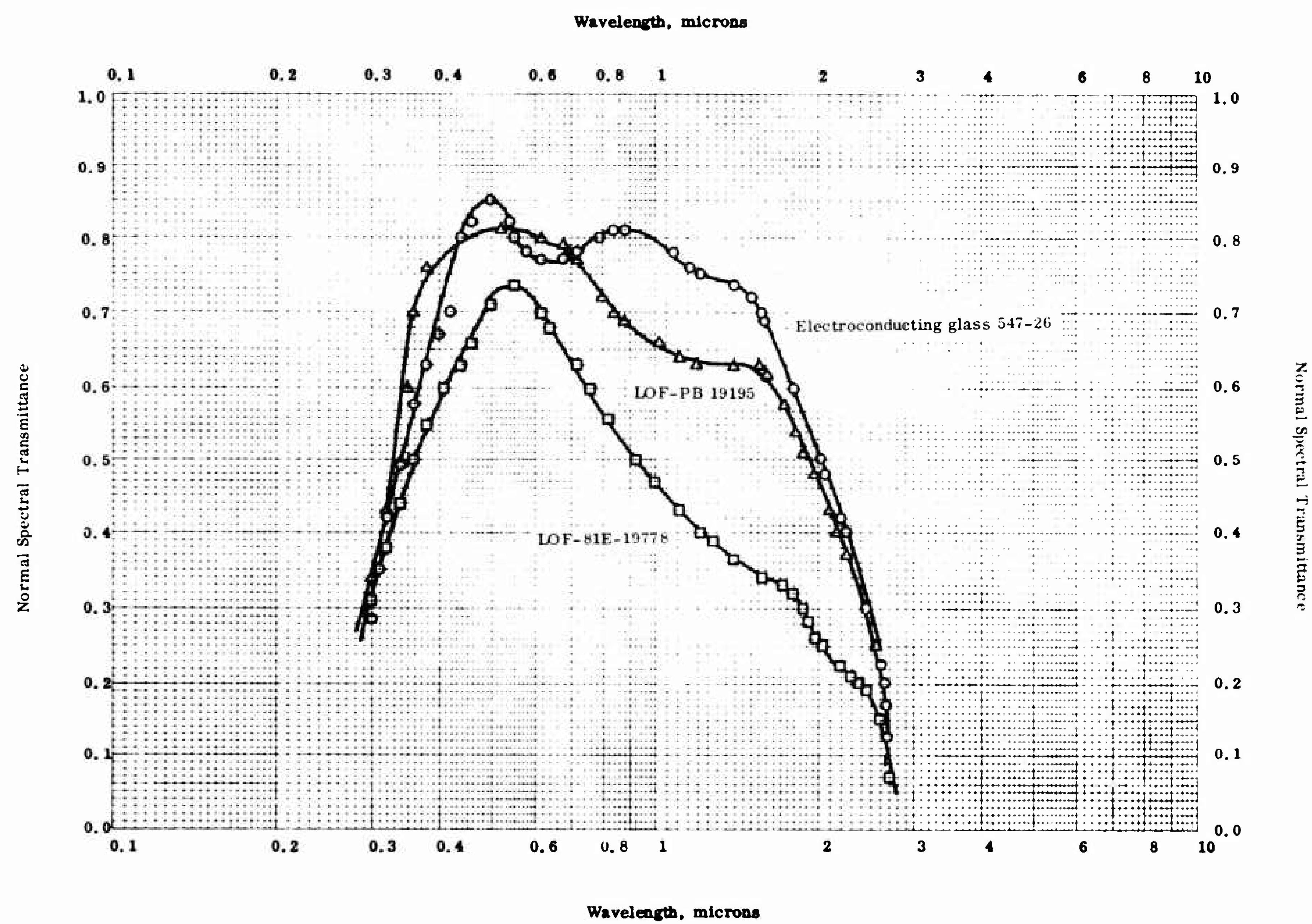


NORMAL TOTAL TRANSMITTANCE -- ELECTROCONDUCTING GLASS

NORMAL TOTAL TRANSMITTANCE -- ELECTROCONDUCTING GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	59-15	605-922		Electroconducting glass 547-26.	Reasonably flat parallel slab.
□	59-15	597-744		Electroconducting glass LOF 81E 19778	Same as above.
△	59-15	675-750		Electroconducting glass LOF PB 19195.	Same as above.

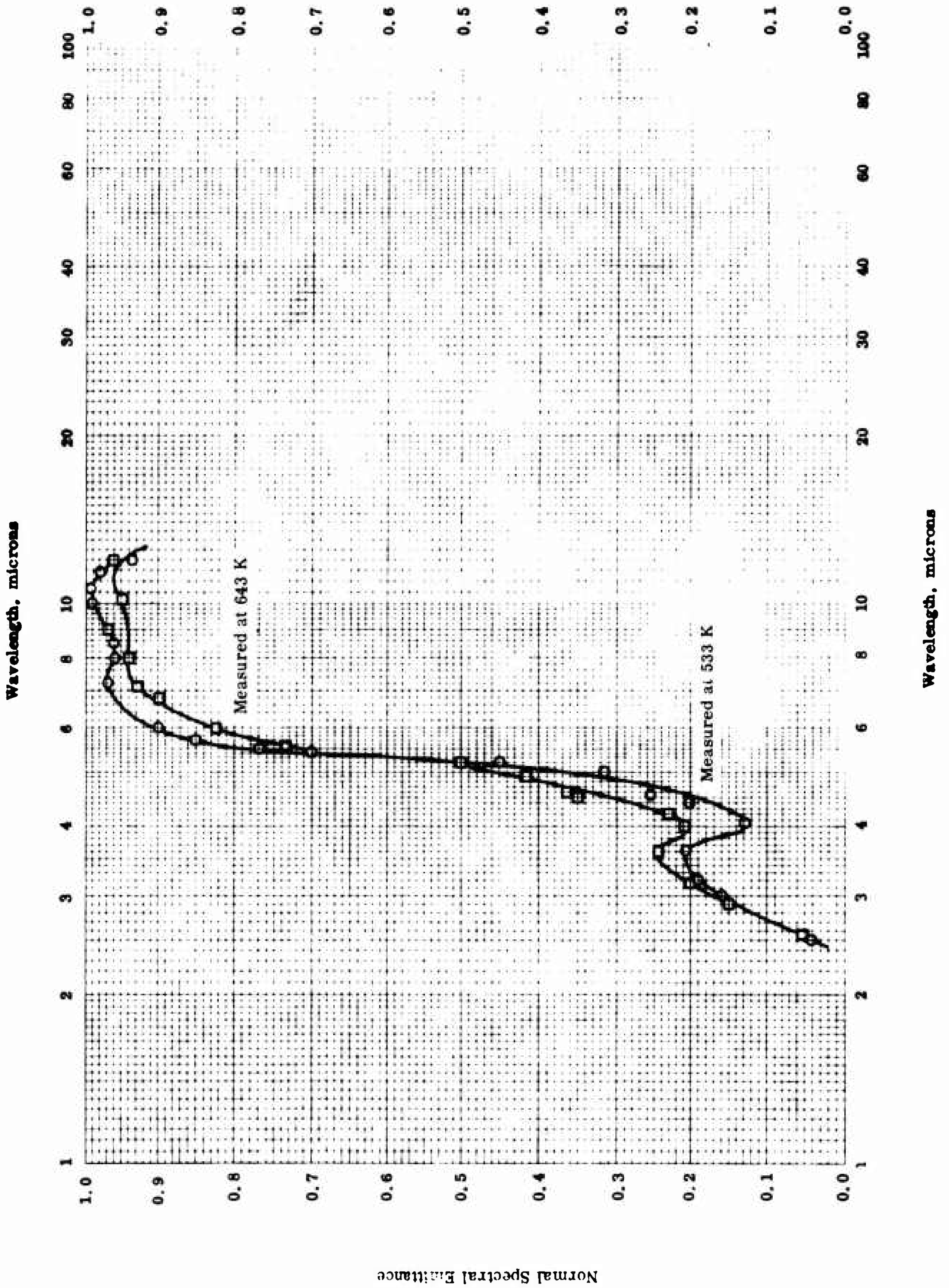


NORMAL SPECTRAL TRANSMITTANCE -- ELECTROCONDUCTING GLASS

NORMAL SPECTRAL TRANSMITTANCE -- ELECTROCONDUCTING GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. °K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	59-15	298	0.3-2.69		Electroconducting glass 547-26.	Reasonably flat parallel slab, data taken from smooth curve.
□	59-15	298	0.3-2.7		Electroconducting glass LOF-81E-19778.	Same as above.
△	59-15	298	0.3-2.7		Electroconducting glass LOF-PB 19195.	Same as above.

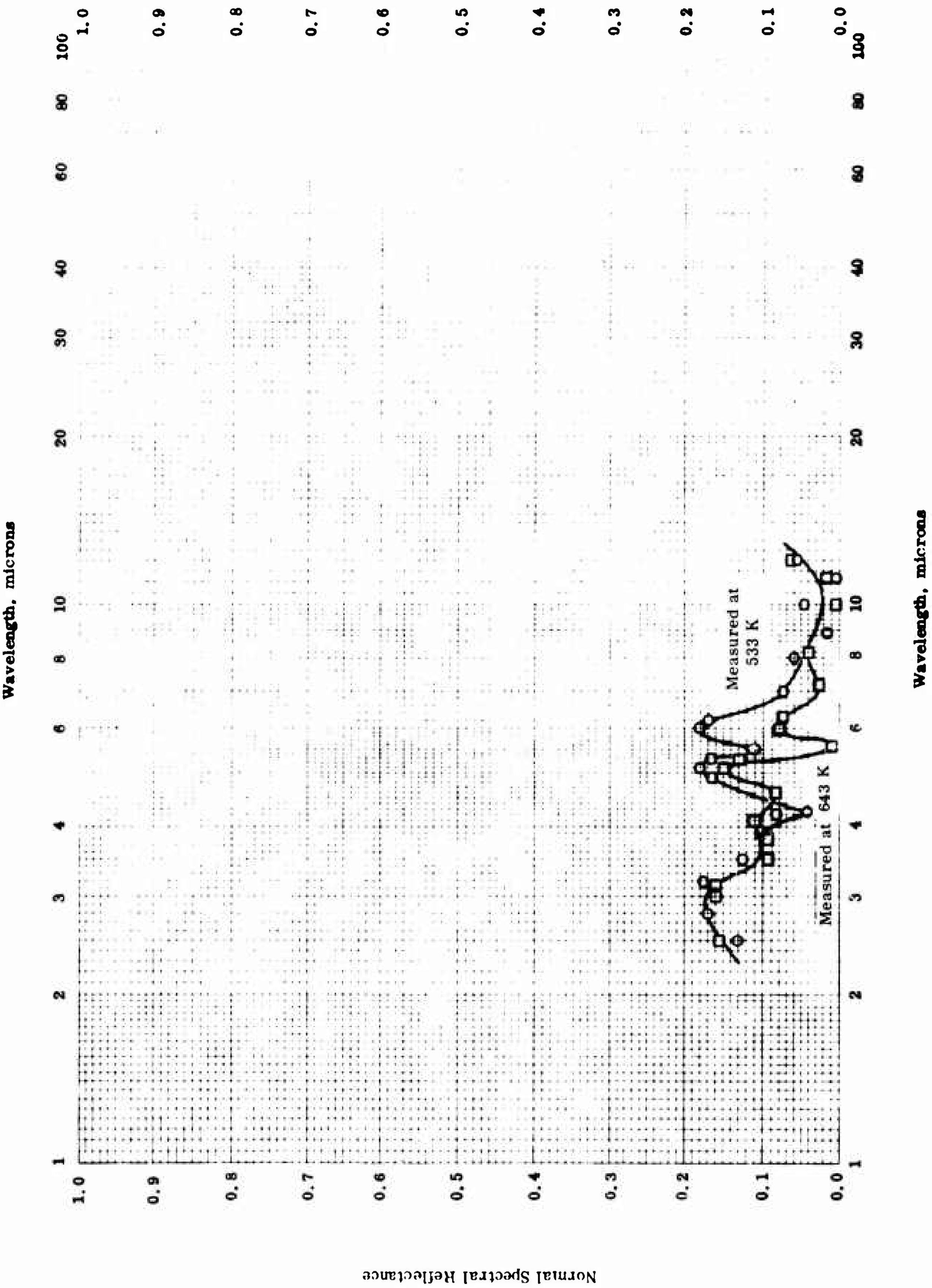


NORMAL SPECTRAL EMITTANCE -- COBALT BLUE GLASS

NORMAL SPECTRAL EMITTANCE -- COBALT BLUE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. $^{\circ}$K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	60-29	533	2.5-12.0		Corning No. 9752; 3.05 mm thickness.	Corning Pyroceram 9606 as working standard.
□	60-29	643	2.55-12.0		Same as above.	Same as above.

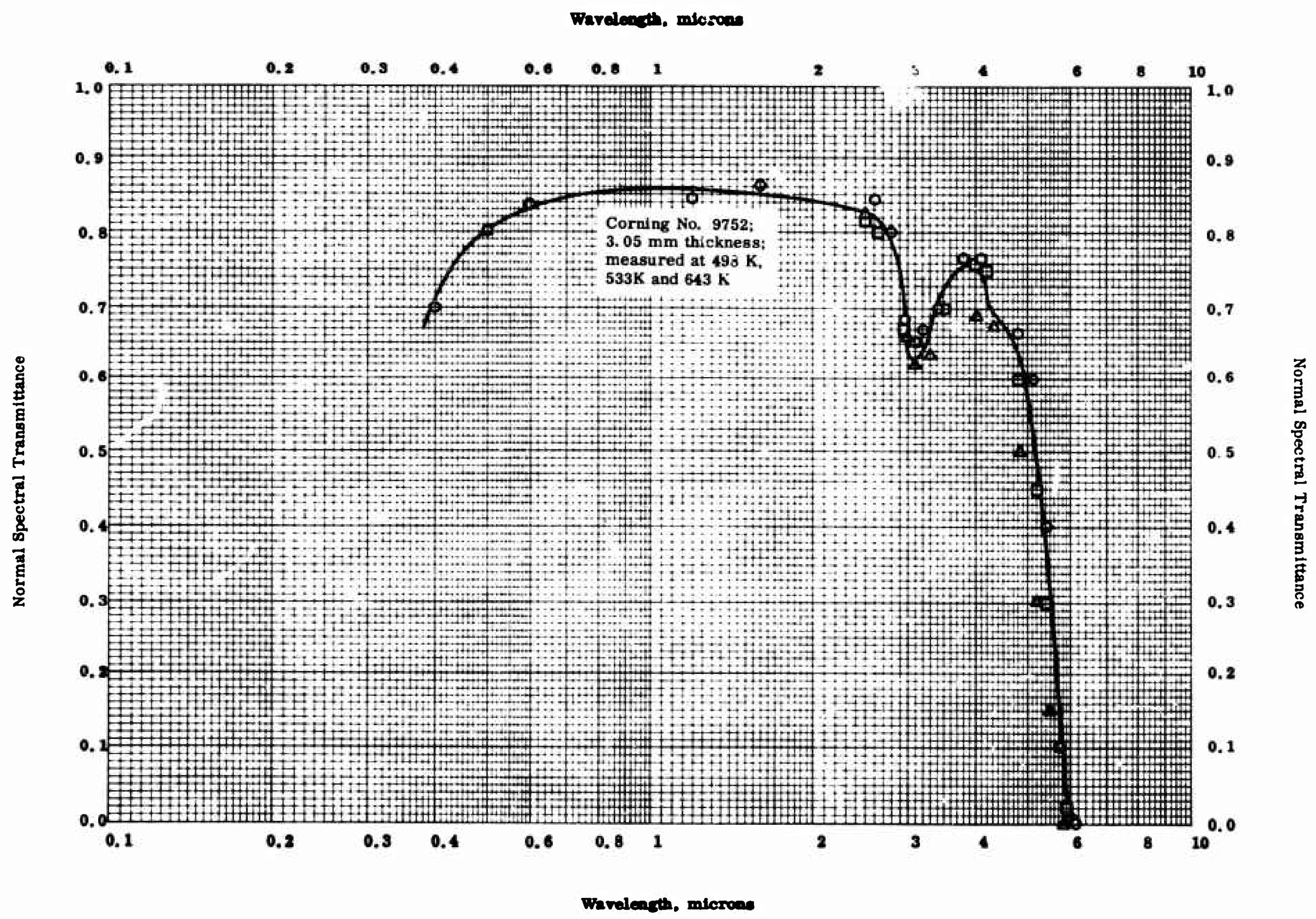


NORMAL SPECTRAL REFLECTANCE -- COBALT BLUE GLASS

NORMAL SPECTRAL REFLECTANCE — COBALT BLUE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. ° K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	60-29	533	2.5-12.0		Corning No. 9752; 3.05 mm thickness.	Calculated from transmittance and emittance.
□	60-29	643	2.5-12.0		Same as above.	Same as above.

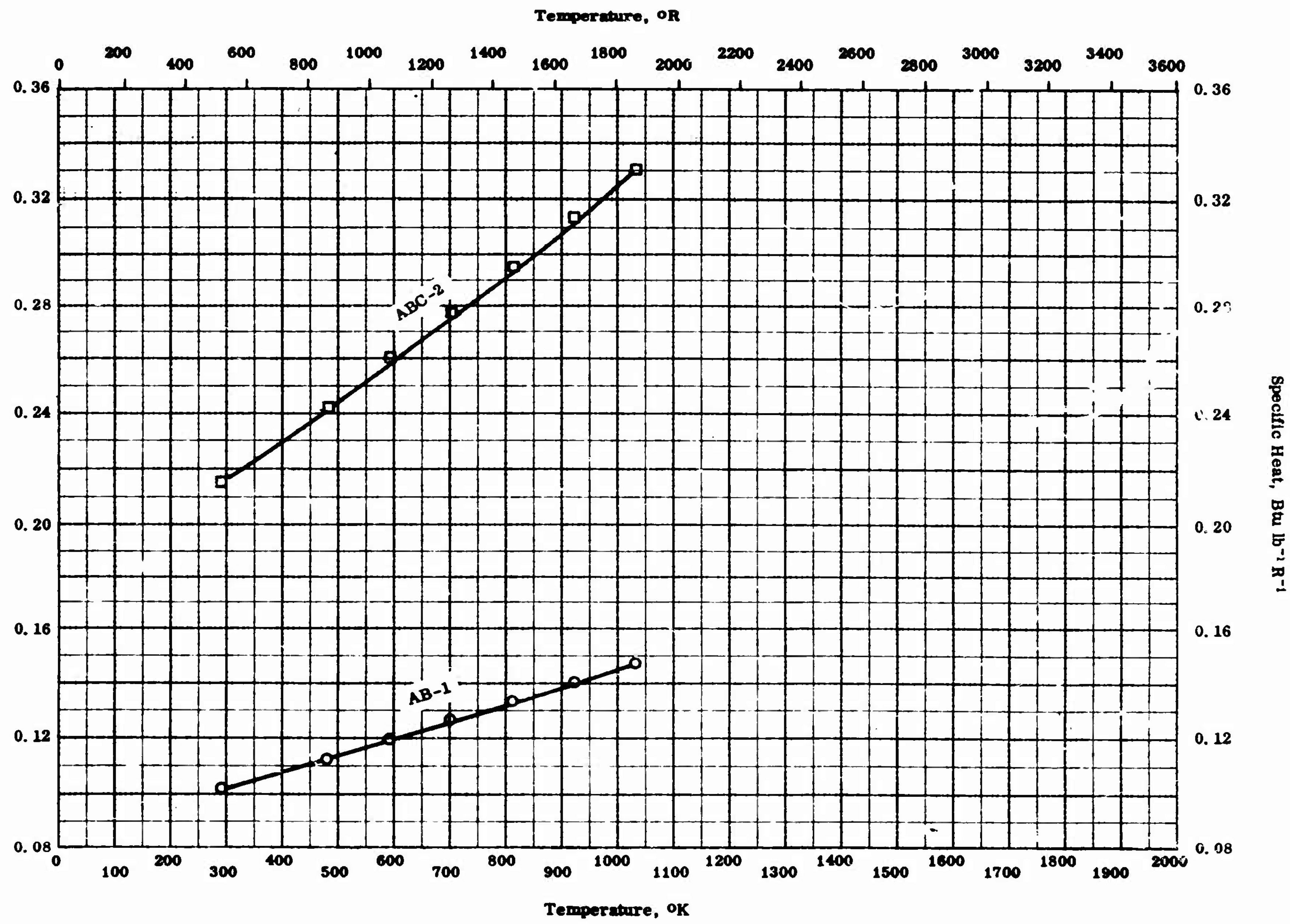


NORMAL SPECTRAL TRANSMITTANCE -- COBALT BLUE GLASS

NORMAL SPECTRAL TRANSMITTANCE — COBALT BLUE GLASS

REFERENCE INFORMATION

Symbol	Ref.	Temp. ° K	Wavelength Range, μ	Rept. Error %	Sample Specifications	Remarks
○	60-29	498	0.4-6.05		Corning No. 9752; 3.05 mm thickness.	
□	60-29	533	2.5-6.2		Same as above.	
△	60-29	643	2.5-5.82		Same as above.	



SPECIFIC HEAT -- MISCELLANEOUS GLASSES

SPECIFIC HEAT — MISCELLANEOUS GLASSES

REFERENCE INFORMATION

Symbol	Ref.	Temp. Range °K	Rept. Error %	Sample Specifications	Remarks
○	60-21	483-1033		Eastman Intran Material ABC-2; density 256 lb ft^{-3}.	
□	60-21	483-1033		Eastman Intran Material AB-1; density 197 lb ft^{-3}.	

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MATERIAL INDEX

MATERIAL INDEX

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
A																
Acrylics	6-II	1020	1020	-	-	-	-	1022	1024	-	1026	-	-	-	-	-
Actinium (Ac)	1	3	3	3	3	-	-	-	-	-	-	-	-	-	-	5
Aggregates	5	-	-	-	-	-	-	1023	1025	-	-	-	-	-	-	-
AISI 201	3	-	-	-	-	-	-	-	-	-	114	-	-	-	-	-
AISI 202	3	-	-	-	-	-	-	-	-	92	-	-	-	-	-	-
AISI 301	3	145	140	-	-	-	-	159	172	182	203	-	243	274	-	-
AISI 302	3	-	140	-	-	-	-	-	166	186	227	-	236	-	-	-
AISI 302B	3	140	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AISI 303	3	-	140	-	-	-	151	-	176	-	-	-	236, 245	-	-	-
AISI 304	3	145	140	-	-	-	151	161	-	189	211	-	257, 262	286	-	-
AISI 304L	3	145	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AISI 305	3	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-
AISI 308	3	-	140	-	-	-	-	-	-	-	-	-	-	-	-	-
AISI 309	3	-	140	-	-	-	-	-	-	193	-	-	-	286	-	-
AISI 310	3	140	141	-	-	-	153	164	180	-	213	-	233	286	-	-
AISI 310 coated with Hastelloy C	6-II	-	-	-	-	-	-	-	-	-	-	-	1337	-	-	-
AISI 310 coated with Hastelloy X	6-II	-	-	-	-	-	-	-	-	-	-	-	1339	-	-	-
AISI 310 coated with Kennametal K-151A	6-II	-	-	-	-	-	-	-	-	-	-	-	1491	-	-	-
AISI 310 coated with Kennametal K-162B	6-II	-	-	-	-	-	-	-	-	-	-	-	1493	-	-	-
AISI 310 coated with spinal enamel	6-II	-	-	-	-	-	-	-	-	-	-	-	1515	-	-	-
AISI 310 coated with strontium titanate	6-II	-	-	-	-	-	-	-	-	-	-	-	1393	-	-	-
AISI 314	3	-	-	-	-	-	-	-	-	-	223	-	-	-	-	-
AISI 316	3	140, 145	141	-	-	-	149	161	174	184	209	229	236, 247, 259, 264	276	-	-
AISI 317	3	-	141	-	-	-	-	-	-	-	-	-	-	-	-	-
AISI 321	3	140, 145	-	-	-	-	-	-	-	186	205	227	236, 249, 259, 266	278	-	-
AISI 321 coated with rinsed-Mason black enamel	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1513	-	-
AISI 321 plated with silver	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1321	-	-
AISI 330	3	-	-	-	-	-	-	-	-	-	213, 407	-	-	-	-	-
AISI 347	3	-	141	-	-	-	149	161	176	186	208	-	251	-	-	-
AISI 403	3	-	53	-	-	-	-	-	79	87	110	-	-	-	-	-
AISI 405	3	-	53	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
AISI 410	3	55	53	-	-	-	-	-	-	87	110	120	122	138	-	-
AISI 414	3	-	-	-	-	-	-	-	-	-	197	-	-	-	-	-
AISI 416	3	-	53	-	-	-	-	-	169	87	110	-	-	-	-	-
AISI 420	3	-	-	-	-	-	-	73	166	87	110, 195	-	-	138	-	-
AISI 422	3	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-
AISI 430	3	-	53	-	-	-	-	73	79	90	-	-	-	138	-	-
AISI 430F	3	-	53	-	-	-	-	-	-	-	-	-	-	-	-	-
AISI 431	3	-	-	-	-	-	-	-	-	-	197	-	-	286	-	-
AISI 440A	3	-	53	-	-	-	-	-	-	-	112	-	-	-	-	-
AISI 440B	3	-	53	-	-	-	-	-	-	-	112	-	-	-	-	-
AISI 440C	3	-	53	-	-	-	-	-	81	-	112	-	-	-	-	-
AISI 446	3	55	53	-	-	-	59	67, 73	79	94	98	120	124, 131	138	-	-
AISI 446 coated with aluminum oxide coating	6-II	-	-	-	-	-	-	-	-	-	-	-	1349	-	-	-
AISI 446 coated with Rokide A coating	6-II	-	-	-	-	-	-	-	-	-	-	-	1351	-	-	-
AISI 611	3	-	-	-	-	-	-	-	-	-	452	-	-	-	-	-
AISI 612	3	-	-	-	-	-	-	-	-	-	353	-	-	-	-	-
AISI 613	3	-	-	-	-	-	-	-	-	-	353	-	-	-	-	-
AISI 650	3	-	-	-	-	-	-	-	-	-	401	-	-	-	-	-
AISI 660	3	-	-	-	-	-	-	-	-	-	401	-	-	-	-	-
AISI 661	3	-	-	-	-	-	-	-	-	-	219	-	-	-	-	-
AISI 662	3	-	-	-	-	-	-	-	-	-	401	-	-	-	-	-
AISI 663	3	-	-	-	-	-	-	-	-	-	401	-	-	-	-	-
AISI 664	2-II	-	-	-	-	-	-	-	-	-	1265	-	-	-	-	-
AISI 665	3	-	-	-	-	-	-	-	-	-	401	-	-	-	-	-
AISI 681	2-II	-	-	-	-	-	-	-	-	-	1267	-	-	-	-	-
AISI 682	2-II	-	-	-	-	-	-	-	-	-	1267	-	-	-	-	-
AISI 690	2-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
AISI C1006	3	-	-	-	-	-	-	-	-	329	-	-	-	-	-	-
AISI C1010	3	-	310	-	-	-	312	316	325	329	335	-	-	-	-	-
AISI C1018	3	-	-	-	-	-	-	-	-	333	-	-	-	-	-	-
AISI C1020	3	-	-	-	-	-	-	-	-	329	-	345-347	-	-	-	-
AISI C1045	3	-	-	-	-	-	-	-	-	333	-	-	-	-	-	-
AISI 3140	3	-	-	-	-	-	-	-	-	365	-	-	-	-	-	-
AISI 4130	3	-	-	-	-	-	-	-	-	85	-	-	-	-	-	-
AISI 4340	3	-	-	-	-	-	-	-	387	395	-	-	-	-	-	-
AISI 8630	3	-	-	-	-	-	-	-	-	-	337	-	-	-	-	-
Akermanite	4-II	-	-	-	-	-	-	1239	-	-	-	-	-	-	-	-
Alathon-10	6-II	1030	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alberit 1005	6-II	-	-	-	-	-	1082	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Alberit 8391-SO	6-II	-	-	-	-	-	1082	-	-	-	-	-	-	-	-	-
Alcoa	1	-	-	-	-	-	-	-	-	-	-	-	19	-	-	-
Alkali and alkaline earth aluminum borosilicate glass	4-II	-	-	-	-	-	-	-	-	-	1715	-	-	-	-	-
Alkyd-isocyanate foam	6-II	952	-	-	-	-	-	954	956	-	958	-	-	-	-	-
Alumina	4-I	3	3	-	-	3	5	8	11-18	20	22-26	-	28-32	34	37	39
Alumina + Mullite	4-II	-	-	-	-	-	-	-	1534	-	-	-	-	-	-	-
Aluminide coating on niobium	6-II	-	-	-	-	-	-	-	-	-	-	-	1435-1437	1439	-	-
Aluminide coating on tantalum	6-II	-	-	-	-	-	-	-	-	-	-	-	1441-1443	1445	-	-
Aluminide coating on titanium	6-II	-	-	-	-	-	-	-	-	-	-	-	1447-1449	1451	-	-
Aluminized-silicone paint on titanium	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1497	-	-
Aluminum (Al)	1	7	7	7	7	7	9	11	13	15	17	-	19-23	25	28	30
Aluminum clad boron carbide	5	979	-		-	-	-	981	-	-	-	-	-	-	-	-
Aluminum coated with silicon (di-)oxide	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1391	-	-
Aluminum coated with silicon (mon-)oxide	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1389	-	-
Aluminum coating on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1287	-	-
Aluminum, Kaiser	1	-	-	-	-	-	-	-	-	-	-	-	19	-	-	-
Aluminum + ΣX_i	2-II	-	-	-	-	-	-	-	829	831	-	-	-	-	-	-
Aluminum + Beryllium	2-I	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-
Aluminum + Beryllium + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	729	-	-	-	-	-
Aluminum + Copper	2-I	-	-	-	-	-	5	7	9	-	11	-	-	-	-	-
Aluminum + Copper + ΣX_i	2-II	731	731	731	-	-	733	735	737-739	741	743-752	-	754-757	759	-	-
Aluminum + Iron	2-I	-	-	-	-	-	-	-	13	-	-	-	-	-	-	-
Aluminum + Magnesium	2-I	-	-	-	-	-	15	-	17	-	-	-	-	-	-	-
Aluminum + Magnesium + ΣX_i	2-II	763	763	-	-	-	765	-	767	-	769	-	771	773	-	-
Aluminum + Manganese	2-I	-	-	-	-	-	-	-	-	-	-	-	19-21	-	-	-
Aluminum + Nickel + ΣX_i	2-II	-	-	-	-	-	775	-	778	-	781	-	-	-	-	-
Aluminum + Silicon	2-I	-	-	-	-	-	-	-	-	-	23	-	-	-	-	-
Aluminum + Silicon + ΣX_i	2-II	-	-	-	-	-	783-785	-	788-794	-	796-804	-	-	-	-	-
Aluminum + Silver	2-I	25, 431	-	-	-	25	27	29	-	-	-	-	-	-	-	-
Aluminum + Uranium	2-I	-	-	-	-	-	-	-	31	-	34	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Aluminum + Zinc + ΣX_i	2-II	806	806	806	-	-	808	810	812	814	816	-	818-823	825	-	-
Aluminum alloys (Special designations)																
2S	2-II	-	-	-	-	-	-	-	829	831	-	-	-	-	-	-
14S	2-II	-	-	-	-	-	-	-	739	-	-	-	-	-	-	-
17S	2-II	-	-	-	-	-	-	-	-	-	743	-	-	-	-	-
24S	2-II	731	-	-	-	-	-	735	737	741	745	-	754-757	759	-	-
75S	2-II	806	-	-	-	-	-	810	812	814	816	-	818-823	825	-	-
1075	1	-	-	-	-	-	-	-	-	-	-	-	-	25	-	-
1100	2-II	-	-	-	-	-	-	-	-	831	-	-	-	-	-	-
2024	2-II	731	-	-	-	-	-	735	737	741	745	-	754-757	759	-	-
2219	2-II	-	-	-	-	-	-	-	-	-	-	-	-	759	-	-
3003	2-I	-	-	-	-	-	-	-	-	-	-	-	19-21	-	-	-
6061	2-II	-	-	-	-	-	-	-	-	-	-	-	771	773	-	-
7075	2-II	806	-	-	-	-	-	810	812	814	816	-	818-823	825	-	-
Alpax Gamma	2-II	-	-	-	-	-	785	-	794	-	802	-	-	-	-	-
C-46	2-II	731	731	731	-	-	-	-	-	-	747	-	-	-	-	-
Duralite	2-II	731	731	731	-	-	-	-	739	-	743	-	-	-	-	-
Gamma, γ	2-II	-	-	-	-	-	-	-	-	-	747	-	-	-	-	-
Hydronalium 5	2-I	-	-	-	-	-	15	-	17	-	-	-	-	-	-	-
Hydronalium 7	2-II	-	-	-	-	-	765	-	767	-	-	-	-	-	-	-
Hydronalium 51	2-II	-	-	-	-	-	765	-	767	-	-	-	-	-	-	-
L'A-Z5G	2-II	806	806	806	-	-	808	810	812	-	816	-	-	-	-	-
Lo-Ex	2-II	-	-	-	-	-	785	-	794	-	798	-	-	-	-	-
RAE 40C	2-II	-	-	-	-	-	775	-	778	-	781	-	-	-	-	-
RAE 47B	2-II	-	-	-	-	-	775	-	778	-	781	-	-	-	-	-
RAE 47D	2-II	-	-	-	-	-	775	-	778	-	-	-	-	-	-	-
RAE 55	2-II	-	-	-	-	-	775	-	778	-	781	-	-	-	-	-
RAE 470	2-II	-	-	-	-	-	-	-	-	-	781	-	-	-	-	-
RAE SA1	2-II	-	-	-	-	-	785	-	792	-	798	-	-	-	-	-
RAE SA44	2-II	-	-	-	-	-	785	-	792	-	798	-	-	-	-	-
RR50	2-II	-	-	-	-	-	783	-	-	-	796	-	-	-	-	-
RR50C	2-II	-	-	-	-	-	-	-	788	-	-	-	-	-	-	-
RR53C	2-II	-	-	-	-	-	783	-	788	-	796	-	-	-	-	-
RR59	2-II	-	-	-	-	-	733	-	739	-	745	-	-	-	-	-
RR77	2-II	-	-	-	-	-	808	-	812	-	816	-	-	-	-	-
RR131D	2-II	-	-	-	-	-	765	-	767	-	769	-	-	-	-	-
Thermafond C3-INA	2-II	731	731	731	-	-	-	-	739	-	743	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Aluminum alloys (Special designations) (cont.)																
Y	2-II	-	-	-	-	-	733	-	739	-	-	-	-	-	-	-
Aluminum antimonide (AlSb)	6-I	-	-	-	-	-	45	47	-	-	49	-	-	-	-	-
Aluminum borate ($2Al_2O_3 \cdot B_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1035
Aluminum borides																
AlB_{10}	6-I	-	160	-		-	-	-	-	-	-	-	-	-	-	-
AlB_{12}	6-I	-	160	-	-	-	162	-	-	-	-	-	-	-	-	-
Aluminum bubbles - graphite fibers composite system	6-II	-	-	-	-	-	-	-	1279	-	-	-	-	-	-	-
Aluminum carbide (Al_4C_3)	5	-	294	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum carbide + Aluminum oxide	5	-	-	-	-	-	-	803	-	-	-	-	-	-	-	-
Aluminum-chromium-molybdenum cermets	6-II	930	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum fluoride (AlF_3)	5	407	407	-	-	407	-	-	-	-	-	-	-	-	-	-
Aluminum-nickel-titanium cermets	6-II	925	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum niobate ($Al_2O_3 \cdot Nb_2O_5$)	4-II	-	1121	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum nitride (AlN)	5	481	481	-	-	-	-	483	485	-	487	-	489-491	493	-	-
Aluminum oxides																
Aluminum oxide (Al_2O_3)	4-I	3	3	-	-	3	5	8	11-18	20	22-26	-	28-32	34	37	39
38-900	4-I	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-
AD-85	4-I	-	-	-	-	-	-	-	-	-	-	-	637	-	639	-
AD-94	4-I	-	-	-	-	-	-	-	-	-	-	-	637	-	639	-
AD-96	4-I	-	-	-	-	-	-	-	-	-	-	-	32	-	37	-
AD-99	4-I	-	-	-	-	-	-	-	-	-	-	-	32	-	37	-
AD-995	4-I	-	-	-	-	-	-	-	-	20	-	-	32	-	-	-
AP-30	4-I	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-
AP-35	4-I	-	-	-	-	-	-	-	-	20	-	-	32	-	37	-
AV-30	4-I	-	-	-	-	-	-	-	-	-	-	-	32	-	37	-
FS-54	4-I	-	-	-	-	-	-	-	-	20	-	-	-	-	-	-
GD-10	4-I	-	-	-	-	-	-	-	-	20	-	-	-	-	-	-
Gulton HSB	4-I	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-
LA-603	4-I	-	-	-	-	-	-	-	-	-	-	-	28-30	-	-	-
RA-4213	4-I	-	-	-	-		-	-	-	-	-	-	28-30	-	-	-
TWA 2, A402	4-I	-	-	-	-	-	-	-	-	-	-	-	32	-	-	-
Wesgo Al-300	4-I	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-
Aluminum oxide foam	4-I	-	-	-	-	-	-	-	18	-	26	-	-	-	-	-
Aluminum oxide reinforced by molybdenum fibers	6-II	-	-	-	-	-	-	-	1261	-	1263	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Aluminum oxide coating on AISI 446	6-II	-	-	-	-	-	-	-	-	-	-	-	1349	-	-	-
Aluminum oxide + ΣX_i	4-I	-	-	-	-	-	-	-	-	-	635	-	637	-	639	-
Aluminum oxide + Aluminum cermet	6-II	-	-	-	-	-	-	-	-	-	729	-	-	-	-	-
Aluminum oxide + Aluminum silicate	4-II	-	-	-	-	-	-	-	1534	-	-	-	-	-	-	-
Aluminum oxide + Beryllium oxide + Magnesium oxide . . .	4-I	-	-	-	-	-	-	-	-	-	599	-	-	-	-	-
Aluminum oxide + Chromium cermet	6-II	731	-	-	-	-	-	-	911	-	733	-	735	-	-	-
Aluminum oxide + Chromium (sesqui-)oxide	4-I	-	-	-	-	-	601	-	-	-	603	-	605	-	-	-
Aluminum oxide + Chromium + + Molybdenum cermet	6-II	737	-	-	-	-	-	-	-	-	739	-	-	-	-	-
Aluminum oxide + Iron cermet .	6-II	-	-	-	-	-	-	-	-	-	741	-	-	-	-	-
Aluminum oxide + Magnesium oxide + Beryllium oxide . . .	4-I	-	-	-	-	-	-	-	-	-	607	-	-	-	-	-
Aluminum oxide + Nickel aluminide	5	-	-	-	-	-	-	-	-	-	-	-	747-749	751	-	-
Aluminum oxide + Nickel (mon-)oxide	4-I	-	-	-	-	-	-	-	-	-	-	-	609	-	-	-
Aluminum oxide + Niobium (pent-)oxide	4-I	-	611	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum oxide + Silicon (di-)oxide	4-I	-	-	-	-	-	613	-	615	-	617	-	619	-	-	-
Aluminum oxide + Silicon (di-)oxide + Titanium (di-)oxide	4-I	-	-	-	-	-	-	-	621	-	-	-	-	-	-	-
Aluminum oxide + Thorium (di-)oxide	4-I	-	623	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum oxide + Thorium (di-)oxide + Beryllium oxide .	4-I	-	625	-	-	-	-	-	-	-	627	-	-	-	-	-
Aluminum oxide + Titanium aluminide	5	-	-	-	-	-	-	-	-	-	-	-	753-755	757	-	-
Aluminum oxide + Titanium (di-)oxide + Chromium + + Molybdenum cermet	6-II	-	-	-	-	-	-	-	-	-	-	-	747	-	-	-
Aluminum oxide + Tungsten + + Chromium cermet	6-II	-	-	-	-	-	-	-	-	-	743	-	745	-	-	-
Aluminum oxide + Uranium (di-)oxide	4-I	629	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum oxide + Zirconium (di-)oxide	4-I	-	-	-	-	-	-	-	631	-	-	-	-	-	-	-
Aluminum oxide + Zirconium (di-)oxide + Beryllium oxide .	4-I	-	633	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum phosphate coating on nickel	6-II	-	-	-	-	-	-	-	-	-	-	-	1429	-	-	-
Aluminum phosphide (AlP) . . .	5	-	-	-	-	-	-	627	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Aluminum silicates	4-II	-	-	-	-	-	1187	1189	1191	1193	1195-1197	-	1199-1201	-	1203	-
Al_2O_3 SiO_2	4-II	-	-	-	-	-	-	1189	1191	-	1195	-		-	-	-
3 Al_2O_3 2 SiO_2	4-II	-	-	-	-	-	-	1189	1191	1193	1197	-	1501	-	1203	-
Aluminum silicate + Aluminum oxide	4-II	-	-	-	-	-	-	-	1562	-	-	-	-	-	-	-
Aluminum silicate + Magnesium oxide	4-II	-	1564	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum silicate glass	4-II	-	-	-	-	-	-	1675	-	1677	-	-	1679	1681	1683-1685	-
Aluminum titanate ($Al_2O_3 \cdot TiO_2$)	4-II	1368	1368	-	-	-	-	1370	1372	-	1374	-	-	-	-	-
Aluminum titanate, vitreous bonded	5	-	-	-	-	-	949-953	-	-	-	955 977	-	-	-	-	-
Aluminum titanate body	4-II	-	-	-	-	-	-	-	-	-	1374	-	-	-	-	-
Aluminum-vanadium intermetalics (Al_3V)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Alundun	4-I	-	-	-	-	-	-	-	11	-	-	-	-	-	-	-
Americium (Am)	1	32	-	-	-	32	-	-	-	-	-	-	-	-	-	34
Americium fluoride (AmF_3)	5	343	-	-	343	343	-	-	-	-	-	-	-	-	-	345
Analcite	4-II	-	-	-	-	-	-	1324	-	-	-	-	-	-	-	-
Anatase	4-I	445	-	-	-	-	-	454	-	-	-	-	-	-	-	-
Andalusite	4-II	-	-	-	-	-	-	1189	-	-	1195	-	-	-	-	-
Anilin resin	6-II	-	-	-	-	-	-	1078	-	-	-	-	-	-	-	-
Anorthite	4-II	-	-	-	-	-	-	1233	-	-	-	-	-	-	-	-
Antimony (Sb)	1	38	36	36	-	-	40	42	44	-	-	-	-	46	-	-
Antimony bismuth telluride ($Sb_{2-x}Bi_xTe_3$)	6-I	-	-	-	-	-	549	-	551	-	-	-	-	-	-	-
Antimony sulfide (Sb_2S_3)	5	-	-	-	-	-	-	643	-	-	-	-	-	645	-	-
Antimony telluride (Sb_2Te_3)	6-I	543	543	-	-	-	545	-	547	-	-	-	-	-	-	-
Antimony telluride + Bismuth telluride	6-I	-	-	-	-	-	705	-	-	-	-	-	-	-	-	-
Antimony telluride + Indium telluride	6-I	-	-	-	-	-	-	-	707	-	709	-	-	-	-	-
Antimony-zirconium intermetallics ($SbZr_2$)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Araldite casting resin 501	6-II	-	-	-	-	-	-	-	-	-	1012	-	-	-	-	-
Armalon 410L	6-II	-	-	-	-	-	-	-	1218	-	-	-	-	-	-	-
Armco iron	1	578	-	-	-	-	581	583	585	587	589	592	594, 598	602	-	-
Armofoam	6-II	962	-	-	-	-	-	-	-	-	966	-	-	-	-	-
Arsenic aluminides																
AsAl	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
As_2Al_3	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic sulfide (As_2S_3)	5	-	-	-	-	-	-	647	-	-	-	-	-	-	-	-
Arsenic telluride (As_2Te_3)	6-I	-	-	-	-	-	-	-	640	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
B																
Baddeleyite	4-I	-	-	-	-	-	-	-	-	-	585	-	-	-	-	-
Bakelites																
BM-261	6-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
BM-704	6-II	-	-	-	-	-	-	-	-	-	998	-	-	-	-	-
BM-3510	6-II	-	-	-	-	-	-	-	-	-	996	-	-	-	-	-
BM-13014	6-II	-	-	-	-	-	-	-	-	-	992	-	-	-	-	-
BM-13080	6-II	-	-	-	-	-	-	-	-	-	994	-	-	-	-	-
BM-13335	6-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
BM-14316	6-II	-	-	-	-	-	-	-	-	-	998	-	-	-	-	-
BM-14726	6-II	-	-	-	-	-	-	-	-	-	994	-	-	-	-	-
BM-15240	6-II	-	-	-	-	-	-	-	-	-	992	-	-	-	-	-
BM-16468	6-II	-	-	-	-	-	-	-	-	-	992	-	-	-	-	-
BM-17711	6-II	-	-	-	-	-	-	-	-	-	994	-	-	-	-	-
BM-17849	6-II	-	-	-	-	-	-	-	-	-	1000	-	-	-	-	-
DYNH	6-II	-	-	-	-	-	-	-	-	-	1045	-	-	-	-	-
Barium + Strontium	2-I	-	36	36	-	-	-	-	-	-	-	-	-	-	-	-
Barium aluminates																
$BaO \cdot Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	977	-	-	-	-	-
$3\ BaO \cdot Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	977	-	-	-	-	-
Barium aluminum silicate ($BaO \cdot Al_2O_3 \cdot 2\ SiO_2$)	4-II	-	-	-	-	-	-	1205	-	-	1207	-	-	-	-	-
Barium beryllium titanate ($BaO \cdot BeO \cdot TiO_2$)	4-II	-	-	-	-	-	-	-	-	-	1390	-	-	-	-	-
Barium borate glass	4-II	-	-	-	-	-	-	-	-	-	1609	-	-	-	-	-
Barium (hexa-)boride (BaB_6) .	6-I	-	296	-	-	-	300	-	-	-	302	-	-	-	-	-
Barium calcium silicate . . .	4-II	-	-	-	-	-	-	-	-	-	1211	-	-	-	-	-
Barium calcium titanate [$(Ca_xBa_{1-x})O \cdot TiO_2$]	4-II	-	-	-	-	-	-	-	1392	1394	-	-	-	-	-	-
Barium carbide (BaC_2)	5	-	294	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium cerium lead titanate [$(Ba_{1-x-y}Pb_xCe_y)O \cdot TiO_2$] .	4-II	-	-	-	-	-	1398	-	-	-	-	-	-	-	-	-
Barium cerium titanate [$(Ba_{1-x}Ce_x)O \cdot TiO_2$]	4-II	-	-	-	-	-	1396	-	-	-	-	-	-	-	-	-
Barium cerium titanate silicate [$(Ba_{1-x}Ce_x)O \cdot (Ti_{1-x}Si_x)O_2$]	4-II	-	-	-	-	-	1209	-	-	-	-	-	-	-	-	-
Barium cerium titanate stannate [$(Ba_{1-x}Ce_x)O \cdot (Ti_{1-y}Sn_y)O_2$] .	4-II	-	-	-	-	-	1354	-	-	-	-	-	-	-	-	-
Barium cerium titanate zirconate [$(Ba_{1-x}Ce_x)O \cdot (Ti_{1-y}Zr_y)O_2$]	4-II	-	-	-	-	-	1500	-	-	-	-	-	-	-	-	-
Barium copper silicate ($BaO \cdot CuO \cdot 4\ SiO_2$)	4-II	-	-	-	-	-	-	-	-	-	1213	-	-	-	-	-
Barium crown glass	4-II	-	-	-	-	-	-	1827	-	-	-	-	-	-	-	-
Barium fluoborate glass	4-II	-	-	-	-	-	-	-	-	-	1611	-	-	-	-	-

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Bari.m fluoride (BaF_2)	5	-	-	-	-	-	-	-	347	-	-	-	-	349	-	-
Barium lanthanum titanate [(La_xBa_{1-x})O · TiO_2)] . . .	4-II	-	-	-	-	-	1400	-	1402	-	-	-	-	-	-	-
Barium-lead intermetallics (Ba_2Pb)	6-I	-	-	-	-	-	-	-	642	-	-	-	-	-	-	-
Barium lead silicate glass . .	4-II	-	-	-	-	-	1689	-	-	-	-	-	-	-	-	-
Barium lead titanates	4-II	-	-	-	-	-	-	-	-	-	1404	-	-	-	-	-
Barium magnesium silicates																
BaO 3 MgO SiO_2.	4-II	-	-	-	-	-	-	-	-	-	1215	-	-	-	-	-
BaO 4 MgO · 3.5 SiO_2	4-II	-	-	-	-	-	-	-	-	-	1215	-	-	-	-	-
Barium magnesium aluminum silicate (3 BaO · 2 MgO · 8 Al_2O_3 · 26 SiO_2)	4-II	-	-	-	-	-	-	-	-	-	1217-1221	-	-	-	-	-
Barium nitride (Ba_3N_2).	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium oxide (BaO)	4-I	-	-	-	-	-	49	51	53	-	-	-	-	-	-	-
Barium oxide + Strontium oxide .	4-I	-	-	-	-	-	-	-	641	-	-	-	-	-	-	-
Barium oxide + Strontium oxide + + Zirconium cermet	6-II	-	-	-	-	-	-	-	911	-	-	-	-	-	-	-
Barium oxide + Strontium oxide + + Zirconium (di-)oxide	4-I	-	-	-	-	-	-	-	643	-	-	-	-	-	-	-
Barium phosphide (Ba_3P_2) . . .	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium selenide (BaSe)	6-I	-	365	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium silicate glass	4-II	-	-	-	-	-	-	-	-	1687	-	-	-	-	-	-
Barium silicide ($BaSi_2$)	6-I	-	371	-	-	-	-	-	-	-	373	-	-	-	-	-
Barium stannide (Ba_2Sn)	6-I	-	-	-	-	-	-	-	531	-	-	-	-	-	-	-
Barium strontium ferrites [(Ba_xSr_{1-x})O · 6 Fe_2O_3] . . .	4-II	1067	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium strontium titanates . . .	4-II	-	-	-	-	-	-	-	-	-	1406	-	-	-	-	-
Barium sulfide (BaS)	5	649	649	-	-	-	-	651	-	-	-	-	-	-	-	-
Barium telluride (BaTe)	6-I	-	636	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium titanates																
BaO · TiO_2	4-II	-	1376	-	-	-	1378-1380	1382	1384	1386	1388	-	-	-	-	-
BaO 3 TiO_2	4-II	-	-	-	-	-	-	-	-	-	1388	-	-	-	-	-
BaO · 4 TiO_2	4-II	-	-	-	-	-	-	-	-	-	1388	-	-	-	-	-
BaO 5 TiO_2	4-II	-	-	-	-	-	-	-	-	-	1388	-	-	-	-	-
BaO 6 TiO_2	4-II	-	-	-	-	-	-	-	-	-	1388	-	-	-	-	-
BaO · 18 TiO_2	4-II	-	-	-	-	-	-	-	-	-	1388	-	-	-	-	-
2 BaO · TiO_2	4-II	-	1376	-	-	-	-	1382	-	-	-	-	-	-	-	-
Barium titanate coating on niobium-zirconium alloy . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1369	-	-	-
Barium titanate + Calcium titanate	4-II	-	1579	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium titanate + Lead titanate .	4-II	-	-	-	-	-	-	1581	-	-	-	-	-	-	-	-
Barium titanate + Manganese niobate	4-II	-	-	-	-	-	-	-	1583	-	-	-	-	-	-	-

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Barium titanate + Strontium titanate	4-II	-	-	-	-	-	-	1585	-	-	-	-	-	-	-	-
Barium titanium germanium oxide ($BaO \cdot TiO_2 \cdot 3\ GeO_2$)	4-II	-	-	-	-	-	-	-	-	-	1127	-	-	-	-	-
Barium titanium silicate glass	4-II	-	-	-	-	-	-	-	-	-	1691	-	-	-	-	-
Barium uranate ($BaO \cdot UO_3$)	4-II	-	1482	-	-	-	-	1484	-	-	-	-	-	-	-	-
Barium zirconate ($BaO \cdot ZrO_2$)	4-II	-	-	-	-	-	-	1496	-	-	1498	-	-	-	-	-
Beetle	6-II	-	-	-	-	-	-	-	-	-	1062	-	-	-	-	-
Beryl	4-II	-	-	-	-	-	-	-	1225	-	1227	-	-	-	-	-
Beryllia	4-I	55	55	55	55	-	57	59	61	65	67	71	73-77	79-81	83	85
Beryllium (Be)	1	48	48	48	48	48	50	53	55	57	59	-	61	63	-	65
Beryllium QM-V	1	-	-	-	-	-	51	-	-	-	-	-	-	-	-	-
Beryllium + ΣX_i	2-II	841	-	-	-	-	-	843	845	-	847	-	-	-	-	-
Beryllium + Aluminum	2-I	38	-	-	-	-	-	-	40	42	-	-	44	-	-	-
Beryllium + Aluminum + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	833	-	-	-	-	-
Beryllium + Beryllium oxide cermet	6-II	751	-	-	-	751	-	753	757	-	762	-	-	-	-	764-766
Beryllium + Magnesium + ΣX_i	2-II	835	-	-	-	-	837	-	839	-	-	-	-	-	-	-
Beryllium aluminate ($BeO \cdot Al_2O_3$)	4-II	-	-	-	-	-	-	979	-	-	981	-	-	-	-	-
Beryllium aluminosilicate ($3\ BeO \cdot Al_2O_3 \cdot 6\ SiO_2$)	4-II	-	-	-	-	-	-	-	1225	-	1227	-	-	-	-	-
Beryllium borides																
BeB	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BeB_2	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
BeB_4	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
BeB_6	6-I	295	296	-	-	-	-	-	-	-	-	-	-	-	-	-
BeB_9	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Be_2B	6-I	295	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Be_5B	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium indium selenide ($InBeSe_3$)	6-I	-	-	-	-	-	-	-	329	-	-	-	-	-	-	-
Beryllium carbide (Be_2C)	5	15	15	15	15	-	-	17	-	-	19	-	-	-	-	21
Beryllium carbide + ΣX_i	5	-	-	-	-	-	-	303	305	-	-	-	-	-	-	-
Beryllium cermet BM15	6-II	-	-	-	-	-	-	-	757	-	-	-	-	-	-	-
Beryllium cermet LYB 1102	6-II	-	-	-	-	-	-		757	-	-	-	-	-	-	-
Beryllium cermet Y6825	6-II	-	-	-	-	-	-	-	757	-	-	-	-	-	-	-
Beryllium cermet Y6826	6-II	-	-	-	-	-	-	-	757	-	-	-	-	-	-	-
Beryllium cermet Y9384	6-II	-	-	-	-	-	-	-	757	-	-	-	-	-	-	-
Beryllium cermet YB1[illegible]00	6-II	-	-	-	-	-	-	-	31	-	-	-	-	-	-	-
Beryllium cermet YB9052	6-II	-	-	-	-	-	-	753	757	-	762	-	-	-	-	-
Beryllium cermet YB9053	6-II	-	-	-	-	-	-	-	-	-	762	-	-	-	-	-
Beryllium cermet YB9054	6-II	-	-	-	-	-	-	753	-	-	762	-	-	-	-	-

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Beryllium chromite ($BeO \cdot Cr_2O_3$)	4-II	-	-	-	-	-		-	-	-	1049	-	-	-	-	-
Beryllium fluoride (BeF_2)	5	351	351	351	351	351		-	-	-	-	-	-	-	-	353
Beryllium nitrides																
Be_3N_2	5	-	495	495	495	-	-	-	497	-	-	-	-	-	-	-
Be_3N_4	5	-	495	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium oxides																
Beryllium oxide (BeO)	4-I	55	55	55	55	-	57	59	61	65	67	71	73-77	79-81	83	85
BD-98	4-I	-	-	-	-	-	-	-	61	65	-	-	77	-	-	-
UOX grade	4-I	-	-	-	-	-	-	-	61	-	-	-	-	-	-	-
Beryllium oxide + Aluminum oxide + Magnesium oxide	4-I	-	-	-	-	-	-	-	-	-	645	-	-	-	-	-
Beryllium oxide + Aluminum oxide + Thorium (di-)oxide	4-I	-	-	-	-	-	-	-	647	-	649	-	-	-	-	-
Beryllium oxide + Aluminum oxide + Thorium (di-)oxide + Magnesium oxide	4-I	-	-	-	-	-	-	-	651	-	-	-	-	-	-	-
Beryllium oxide + Aluminum oxide + Zirconium (di-)oxide	4-I	-	-	-	-	-	-	-	653	-	-	-	-	-	-	-
Beryllium oxide + Aluminum oxide + Zirconium (di-)oxide + Magnesium oxide	4-I	-	-	-	-	-	-	-	655	-	-	-	-	-	-	-
Beryllium oxide + Beryllium cermet	6-II	-	-	-	-	751	-	755	760	-	762	-	-	-	-	-
Beryllium oxide + Beryllium + Molybdenum cermet	6-II	-	-	-	-	-	-	768	770	-	772	-	-	-	-	-
Beryllium oxide + Beryllium + Silicon cermet	6-II	-	-	-	-	-	-	-	774	-	776	-	-	-	-	-
Beryllium oxide + Magnesium oxide + Aluminum oxide	4-I	-	-	-	-	-	-	-	657	-	-	-	-	-	-	-
Beryllium oxide + Magnesium oxide + Aluminum oxide + Thorium (di-)oxide	4-I	-	-	-	-	-	-	-	659	-	-	-	-	-	-	-
Beryllium oxide + Magnesium oxide + Aluminum oxide + Zirconium (di-)oxide	4-I	-	-	-	-	-	-	-	661	-	-	-	-	-	-	-
Beryllium oxide + Magnesium oxide + Zirconium (di-)oxide + Aluminum oxide	4-I	-	-	-	-	-	-	-	663	-	-	-	-	-	-	-
Beryllium oxide + Molybdenum cermet	6-II	-	-	-	-	-	-	778	-	-	-	-	-	-	-	-
Beryllium oxide + Molybdenum beryllide	5	-	-	-	-	-	-	759	-	-	-	-	-	-	-	-
Beryllium oxide + Niobium cermet	6-II	780	-	-	-	-	-	-	-	-	782	-	-	-	-	-
Beryllium oxide + Niobium beryllide	5	-	-	-	-	-	-	761	-	-	-	-	-	-	-	-
Beryllium oxide + Tanatlum beryllide	5	-	-	-	-	-	-	763	-	-	-	-	-	-	-	-

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Beryllium oxide + Thorium (di-)oxide + Aluminum oxide	4-I	-	-	-	-	-	-	-	-	-	665	-	-	-	-	-
Beryllium oxide + Titanium beryllide	5	-	-	-	-	-	-	765	-	-	-	-	-	-	-	-
Beryllium oxide + Uranium (di-)oxide	4-I	-	-	-	-	-	-	-	667	-	-	-	-	-	-	-
Beryllium oxide + Zirconium beryllide	5	-	-	-	-	-	-	767	-	-	-	-	-	-	-	-
Beryllium oxide + Zirconium (di-)oxide + Magnesium oxide + + Aluminum oxide	4-I	-	-	-	-	-	-	-	669	-	-	-	-	-	-	-
Beryllium oxide porcelain type 4811	5	1003	-	-	-	-	-	-	1017	-	-	-	-	-	-	
Beryllium silicate ($2\ BeO\ SiO_2$)	4-II										1223					
Beryllium sulfide (BeS)	5	653	653	-	-	-	-	-	-	-		-	-	-	-	655
Beryllium titanates																
$BeO \cdot TiO_2$	4-II	-	-	-	-	-		-	-	-	1408	-	-	-	-	-
$2\ BeO \cdot TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1408	-	-	-	-	-
$4\ BeO \cdot TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1408	-	-	-	-	-
$6\ BeO \cdot TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1408	-	-	-	-	-
Bismuth-cerium intermetallics																
BiCe	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
$BiCe_3$	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Bi_3Ce_4	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Bismuth selenide tellurides ($Bi_2Te_{3-x}Se_x$)	6-I	-	-	-	-	-	564	-	566	-	-	-	-	-	-	-
Bismuth stannate ($Bi_2O_3 \cdot 3\ SnO_2$)	4-II								1357							
Bismuth telluride (Bi_2Te_3)	6-I	553	553	-	-	-	555	557	559	561	-	-	-	-	-	-
Bismuth telluride + Bismuth selenide	6-I	-	-	-	-	-	711	-	713	-	-	-	-	-	-	-
Bismuth tellurium sulfide (Bi_2Te_2S)	5		-	-	-	-	657	-	659	-	-	-	-	-	-	-
Boral clad with boron carbide	5	979	-	-	-	-	-	981	-	-	-	-	-	-	-	-
Borate glasses	4-II	1605	-	-	-	-	1607	-	-	-	1609-163[illegible]	-	-	-	-	-
Borolites																
Borolite	6-II	842	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Borolite I, grade F	6-II	-	-	-	-	-	-	846	-	-	-	-	-	-	-	-
Borolite I, grade G	6-II	-	-	-	-	-	844	-	-	-	850	-	-	-	-	-
Borolite I, grade S	6-II	-	-	-	-	-	844	846	-	-	-	-	-	-	-	-
Borolite IV	6-II	913	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron (B)	1	67	67	-	67	67	69	71	-	-	-	-	-	-	-	73
Boron coating on molybdenum	6-II	-	-	-	-	-	-	-	-	-	-	-	1289	-	-	-
Boron coating on niobium-zirconium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1291	-	-	-
Boron + ΣX_i	2-II	849	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Boron + Iron	2-I	-	-	-	-	46	-	-	-	-	-	-	-	-	-	48
Boron + Silicon	2-I	-	-	-	-	-	50	-	-	-	-	-	-	-	-	-
Boron aluminate (2 B_2O_3 9 Al_2O_3)	4-II	-	-	-	-	-	-	-	-	-	983	-	-	-	-	-
Boron carbide (B_4C)	5	25	23	-	-	-	-	27	29	31	33	-	35	-	-	37
Boron carbide clad with aluminum	5	979	-	-	-	-	-	981	-	-	-	-	-	-	-	-
Boron carbide coating on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1403	1405	-	-
Boron carbide + Iron cermet . .	6-II	928	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron oxide (B_2O_3)	4-I	-	-	-	-	-	-	87	-	-	-	-	-	-	-	89
Boron oxide glass	4-II	-	-	-	-	-	-	1635	-	-	-	-	-	-	-	-
Boron nitride (BN)	5	499	499	-	499	-	501	503	505	-	507	-	509-513	515	-	-
Boron nitride + Boron oxide . .	5	-	-	-	-	-	832	834	836	-	838	-	-	-	-	-
Boron nitride + Graphite	5	-	-	-	-	-	-	828	830	-	-	-	-	-	-	-
Boron phosphide (BP)	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron silicides																
B_4Si	6-I	-	-	-	-	-	-	-	-	-	-	-	375-377	379	-	-
B_6Si	6-I	-	-	-	-	-	-	-	-	-	-	-	375-377	379	-	-
Borosilicate glass	4-II	1693	1693	-	-	-	1695	1697	1699	1701	1703	-	1705-1707	1709	1711-1713	-
Brass	2-I	-	-	-	-	-	170	172	-	174	-	-	178-180	182	-	-
	2-II								1000							
Brass, aluminum	2-II	-	-	-	-	-	-	-	-	-	1004	-	-	-	-	-
Brass, free cutting leaded . . .	2-I	168	-	-		-	-	-	-	-	-	-	-	-	-	-
Brass, red	2-II	-	-	-	-	-	-	-	-	-	1002	-	-	-	-	-
Brass, yellow	2-I	-	-	-	-	-	-	-	-	174	-	-	176	-	-	-
	2-II								1000							
Brazing alloy																
GE-62	2-II	-	-	-	-	-	-	-	-	-	1168	-	-	-	-	-
GEH62-V	2-II	-	-	-	-	-	-	1130	-	-	-	-	-	-	-	-
GE-76	2-II	-	-	-	-	-	-	-	-	-	1378	-	-	-	-	-
Bricks																
Bricks	5	-	-	-	-	-	1029	-	1031-1033	-	1035-1037	-	1039-1043	-	-	-
Chrome-magnesite	5	-	-	-	-	-	1029	-	-	-	-	-	1039	-	-	-
Chromemagnesite	4-I	-	-	-	-	-	-	-	741	-	-	-	-	-	-	-
Forsterite	5	-	-	-	-	-	1029	-	1033	-	-	-	-	-	-	-
K-30 insulating	5	-	-	-	-	-	-	-	-	-	1035	-	-	-	-	-
Magnesia	5	-	-	-	-	-	1029	-	-	-	-	-	-	-	-	-
Magnesite	4-I	-	-	-	-	-	-	-	743	733, 737	-	-	-	-	-	-

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Bricks (cont.)																
Magnesite-chrome	5	-	-	-	-	-	1029	-	-	-	-	-	-	-	-	-
Magnesite "hu"	5	-	-	-	-	-	-	-	1033	-	-	-	-	-	-	-
Mica	5	-	-	-	-	-	-	-	939	-	-	-	-	-	-	-
Mica, white	5	-	-	-	-	-	-	-	989	-	-	-	-	-	-	-
Silica	4-I	-	-	-	-	-	-	-	816	363, 796, 818	-	-	-	-	-	-
. . . .	5	-	-	-	-	-	-	-	-	-	1037	-	1041	-	-	-
Silicon carbide	5	-	-	-	-	-	-	-	125	-	-	-	-	-	-	-
Sillimanite	4-I	-	-	-	-	-	-	-	615	-	-	-	-	-	-	-
Vermiculite insulating	5	-	-	-	-	-	-	-	989	-	-	-	-	-	-	-
Bromyrite	5	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-
Bronze	2-I	154	-	-	-	-	156	-	-	-	-	-	162	-	-	-
. . . . . .	2-II	-	-	-	-	-	-	-	-	-	998	-	-	-	-	-
Bronze, aluminum	2-II	-	-	-	-	-	-	-	-	-	950	952	954-958	960	-	-
Bronze, lead	2-II	-	-	-	-	-	-	-	-	-	976	-	-	-	-	-
Bronze, phosnic	2-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
Bronze, silicon	2-II	-	-	-	-	-	-	-	-	-	994	-	-	-	-	-
Bronze tellurium-aluminum . .	2-II	-	-	-	-	-	-	-	-	-	[illegible]	-	-	-	-	-
Bronze, Tin-Zinc	2-II	-	-	-	-	-	-	-	-	-	998	-	-	-	-	-
Buna S	6-II	-	-	-	-	-	-	-	-	1066	-	-	-	-	-	-
Butadiene-acrylonitrile copolymer	6-II	-	-	-	-	-	-	1054	-	1060	-	-	-	-	-	-
Butyl GR-1	6-II	-	-	-	-	-		-	-	1062	-	-	-	-	-	-
C																
CA-2, carbide tool steel . . .	6-II	-	-	-	-	-	-	-	889	-	-	-	-	-	-	-
CA-4, carbide tool steel	6-II	-	-	-	-	-	-	-	889	-	-	-	-	-	-	-
Cadmium (Cd)	1	-	-	-	-	-	-	-	-	-	-	-	75	-	-	-
Cadmium + Silver	2-I	-	52	52	-	-	-	-	-	-	-	-	-	54	-	-
Cadmium lead silicate glass .	4-II	-	-	-	-	-	1731	-	-	-	-	-	-	-	-	-
Cadmium oxides																
CdO	4-I	91	91	-	-	91	-	93	-	-	-	-	-	-	-	97
Cd_2O_3	4-I	-	-	-	-	-	-	-	-	-	95	-	-	-	-	-
Cadmium sulfide (CdS) . . .	5	-	-	-	-	-	661	663	-	-	-	-	665	-	-	-
Cadmium telluride (CdTe) . . .	6-I	-	-	-	-	-	568	570	-	-	-	-	-	-	-	-
Calcia	4-I	99	99	-	-	-	101	103	105	-	107	-	-		-	109
Calcium (Ca)	1	-	77	77	-	-	79	-	-	-	-	-	-	-	-	81
Calcium + Magnesium . . .	2-I	-	56	-	-	-	58	-	-	-	-	-	-	-	-	-

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Calcium aluminates																
$CaO \cdot Al_2O_3$	4-II	-	-	-	-	-	-	987	-	-	-	-	-	-	-	-
$CaO \cdot 2\ Al_2O_3$	4-II	985	985	-	-	-	-	987	-	-	-	-	-	-	-	-
$CaO \cdot 6\ Al_2O_3$	4-II	-	-	-		-	-	-	-	-	991	-	-	-	-	-
$3\ CaO \cdot Al_2O_3$	4-II	-	-	-	-	-	-	987	-	-	-	-	-	-	-	-
$3\ CaO \cdot 5\ Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	989	-	-	-	-	-
$12\ CaO \cdot 7\ Al_2O_3$	4-II	-	-	-	-	-	-	987	-	-	-	-	-	-	-	-
Calcium aluminate + Molybdenum disilicide cermet	6-II	-	-	-	-	-	-	-	-	-	784	-	-	-	-	-
Calcium aluminum silicates																
$CaO \cdot Al_2O_3 \cdot 2\ SiO_2$	4-II	-	-	-	-	-	-	1233	-	-	1235	-	-	-	-	-
$2\ CaO \cdot Al_2O_3 \cdot SiO_2$	4-II	-	-	-	-	-	-	1233	-	-	1235	-	-	-	-	-
$2\ CaO \cdot 2\ Al_2O_3 \cdot 8\ SiO_2 \cdot 7\ H_2O$	4-II	-	-	-	-	-	-	1233	-	-	-	-	-	-	-	-
Calcium barium cerium titanate $[(Ba_{1-x-y}Ca_xCe_y)O \cdot TiO_2]$	4-II	-	-	-	-	-	1420	-	-	-	-	-	-	-	-	-
Calcium borates																
$CaO \cdot B_2O_3$	4-II	-	1037	1037	-	-	-	1039	-	-	-	-	-	-	-	-
$CaO \cdot 2\ B_2O_3$	4-II	-	1037	1037	-	-	-	1039	-	-	-	-	-	-	-	-
$2\ CaO \cdot B_2O_3$	4-II	-	1037	1037	-	-	-	1039	-	-	-	-	-	-	-	-
$3\ CaO \cdot B_2O_3$	4-II	-	1037	1037	-	-	-	1039	-	-	-	-	-	-	-	-
Calcium borate glass	4-II	-	-	-	-	-	-	-	-	-	1613	-	-	-	-	-
Calcium (hexa-)boride (CaB_6)	6-I	-	296	-	-	-	300	-	-	-	302	-	-	-	-	-
Calcium carbide + Calcium oxide	5	-	-	-	-	-	-	805	-	-	-	-	-	-	-	-
Calcium carbonate ($CaCO_3$)	4-II	-	-	-	-	-	-	-	-	-	-	-	-	1045	-	-
Calcium copper silicate ($CaO \cdot CuO \cdot 4\ SiO_2$)	4-II	-	-	-	-	-	-	-	-	-	1238	-	-	-	-	-
Calcium ferrites																
$CaO \cdot Fe_2O_3$	4-II	-	-	-	-	-	-	1069	-	-	-	-	-	-	-	-
$2\ CaO \cdot Fe_2O_3$	4-II	-	-	-	-	-	-	1069	-	-	-	-	-	-	-	-
Calcium fluoride (CaF_2)	5	355	355	-	-	-	-	-	357	-	359	-	-	361	-	-
Calcium hafnate ($CaO \cdot HfO_2$)	4-II	1107	1107	-	-	-	-	-	-	-	1109	-	-	-	-	-
Calcium lanthanum manganese oxide ($La_xCa_{1-x}MnO_3$)	4-II	-	-	-	-	-	1129	-	1131	-	-	-	-	-	-	-
Calcium-lead intermetallics (Ca_2Pb)	6-I	-	-	-	-	-	-	-	646	-	-	-	-	-	-	-
Calcium lead silicate glass	4-II	-	-	-	-	-	1733	-	-	-	-	-	-	-	-	-
Calcium magnesium silicates																
$CaO \cdot MgO \cdot 2\ SiO_2$	4-II	-	-	-	-	-	-	1239	-	-	-	-	-	-	-	-
$2\ CaO \cdot MgO \cdot 2\ SiO_2$	4-II	-	-	-	-	-	-	1239	-	-	-	-	-	-	-	-
$3\ CaO \cdot MgO \cdot 2\ SiO_2$	4-II	-	-	-	-	-	-	1239	-	-	-	-	-	-	-	-
$2\ CaO \cdot 5\ MgO \cdot 8\ SiO_2 \cdot 2\ H_2O$	4-II	-	-	-	-	-	-	1239	-	-	-	-	-	-	-	-
Calcium molybdate ($CaO \cdot MoO_3$)	4-II	-	-	-	-	-	-	1111	-	-	-	-	-	-	-	-
Calcium nitrides																
CaN	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Ca_3N_2	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-

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Calcium oxide (CaO)	4-I	99	99	-	-	-	101	103	105	-	107	-	-	-	-	109
Calcium oxide + Titanium (di-) oxide	4-I	-	-	-	-	-	-	-	-	-	671	-	-	-	-	-
Calcium selenides (CaSe)	6-I	-	365	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium silicates																
$CaO \cdot SiO_2$	4-II	-	-	-	-	-	-	1229	-	-	1231	-	-	-	-	-
$2\ CaO \cdot SiO_2$	4-II	-	-	-	-	-	-	1229	-	-	1231	-	-	-	-	-
$3\ CaO \cdot SiO_2$	4-II	-	-	-	-	-	-	1229	-	-	-	-	-	-	-	-
Calcium silicate glass	4-II	-	-	-	-	-	-	-	-	-	-	-	-	-	1729	-
Calcium silicides																
CaSi	6-I	-	523	-	-	-	-	-	-	-	-	-	-	-	-	-
$CaSi_2$	6-I	-	523	-	-	-	-	-	-	-	-	-	-	-	-	-
Ca_2Si	6-I	-	523	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium stannate ($CaO \cdot SnO_2$)	4-II	-	-	-	-	-	-	-	1359	-	-	-	-	-	-	-
Calcium strontium barium cerium titanate [$(Ba_{1-x-y-z}Ca_xSr_yCe_z)O \cdot TiO_2$]	4-II	-	-	-	-	-	1422	-	-	-	-	-	-	-	-	-
Calcium titanates																
$CaO \cdot TiO_2$	4-II	1410	1410	-	-	-	1412	1414	1416	-	1418	-	-	-	-	-
$3\ CaO \cdot 2\ TiO_2$	4-II	-	-	-	-	-	-	1414	-	-	1418	-	-	-	-	-
Calcium titanate coating on niobium-zirconium alloy	6-II	-	-	-	-	-	-	-	-	-	-	-	1371	-	-	-
Calcium tungstate ($CaO \cdot WO_3$)	4-II	-	-	-	-	-	-	1472	-	-	-	-	-	-	-	-
Calcium uranate ($CaO \cdot UO_3$)	4-II	-	1482	-	-	-	-	1486	-	-	-	-	-	-	-	-
Calcium vanadates																
$CaO \cdot V_2O_5$	4-II	-	-	-	-	-	-	1488	-	-	-	-	-	-	-	-
$2\ CaO \cdot V_2O_5$	4-II	-	-	-	-	-	-	1488	-	-	-	-	-	-	-	-
$3\ CaO \cdot V_2O_5$	4-II	-	-	-	-	-	-	1488	-	-	-	-	-	-	-	-
Calcium zirconate ($CaO \cdot ZrO_2$)	4-II	1502	1502	-	-	-	-	1504	-	-	1506	-	-	-	-	-
Carbide tool steels	6-II	-	-	-	-	-	-	-	889	-	-	-	-	-	-	-
Carbofrax	5	-	-	-	-	-	-	-	307	-	-	-	309-311	-	-	-
Carboloy 44A	6-II	887	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carboloy 55A	6-II	887	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbons																
Carbon (C)	1	83	-	-	-	83	85	-	87	-	-	-	91-93	95	-	-
Amorphous	1	-	-	-	-	-	83	-	87	-	-	-	-	-	-	-
GA grade	1	-	-	-	-	-	-	-	-	-	-	-	91	95	-	-
Pyrolytic	1	83	-	-	-	-	-	-	89	-	-	-	-	-	-	-
Carbon coating on molybdenum	6-II	-	-	-	-	-	-	-	-	-	-	1293	1295	-	-	-
Carbon electrode	1	-	-	-	-	-	85	-	87	-	-	-	-	-	-	-
Carbon impregnated graphite	1	-	-	-	-	-	-	-	358	-	-	-	-	-	-	-
Carbon-phenolic laminate MX-4926	6-II	-	-	-	-	-	-	1134	-	-	-	-	-	-	-	-

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Carbon steels	3	-	-	-	-	3	5, 312	7-10	-	12-14	16-20	-	-	-	-	22
Carbonyl nickel	1	-	694	-	-	-	-	-	-	-	-	-	-	-	-	-
Cast iron	3	27	-	-	-	-	-	-	29-37, 437	-	30-41, 444	-	-	-	-	-
Cast iron, gray (see grey cast iron)																
Cast iron, nodular (see Nodular cast iron)																
Castolite	6-II	974	-	-	-	-	-	-	976	1082	978	-	-	-	-	-
Catalin	6-II	-	-	-	-	-	-	-	-	-	986	-	-	-	-	-
Cellulose acetates	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Cellulose acetate, expanded . .	6-II	-	-	-	-	-	-	-	939	-	-	-	-	-	-	-
Cellulose acetate butyrate . . .	6-II	-	-	-	-	-	-	-	-	-	946	-	-	-	-	-
Cellulose propionate	6-II	-	-	-	-	-	-	-	-	-	944	-	-	-	-	-
Cement-barytes aggregate . . .	5	-	-	-	-	-	-	1023	1025	-	-	-	-	-	-	-
Ceramic laminate	6-II	-	-	-	-	-	-	-	-	-	1225	-	-	-	-	-
Cercor	4-II	-	-	-	-	-	-	-	-	1591	-	-	-	-	-	-
Ceria	4-I	111	111	-	-	-	113	115	119	-	121	-	124-128	-	-	-
Cerium (Ce)	1	402	402	402	402	402	404	406	-	-	-	-	-	-	-	408
Cerium + ΣX_i	2-II	-	853	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium + Neodymium	2-I	-	-	-	-	-	-	-	-	-	60	-	-	-	-	-
Cerium + Silicon + ΣX_i	2-II	-	851	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium aluminate ($2CeO \cdot 3Al_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	993	-	-	-	-	-
Cerium aluminides																
$CeAl$	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeAl_2$	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeAl_4$	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_3Al_2	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium aluminum silicides ($Ce_2Al_3Si_2$)	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-bismuth intermetallics (CeBi)	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium borides																
CeB_4	6-I	296	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CeB_6	6-I	295, 296	296	-	-	-	300		-	-	302	-	-	-	-	-
Cerium (tri-)bromide ($CeB4_3$) .	5	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-cadmium intermetallics																
$CeCd$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeCd_2$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeCd_3$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeCd_{11}$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Cerium carbides																
CeC_2	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium (tri-) chloride ($CeCl_3$) .	5	339	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-cobalt intermetallics																
$CeCo_2$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeCo_5$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-copper intermetallics																
CeCu	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeCu_2$	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeCu_4$	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeCu_6$	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium (tri-) fluoride (CeF_3) . .	5	363	3[illegible]	-	-	-	-	365	-	-	-	-	-	-	-	-
Cerium-gallium intermetallics ($CeGa_2$)	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-gold intermetallics																
CeAu	6-I	-	662	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeAu_2$	6-I	-	662	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeAu_3$	6-I	-	662	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2Au	6-I	-	662	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium hydride (CeH_2).	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-indium intermetallics ($CeIn_3$)	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium (tri-) iodide (CeI_3) . . .	5	-	477	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-lead intermetallics																
$CePb_3$	6-I	662	665	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2Pb	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-magnesium intermetallics																
CeMg	6-I	662	663	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeMg_3$	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeMg_9$	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_4Mg	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-mercury intermetallics (CeHg)	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-nickel intermetallics																
$CeNi_2$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeNi_3$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeNi_5$	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2Ni_7	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium nitride (CeN)	5	621	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-osmium intermetallics ($CeOs_2$)	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Cerium oxides																
CeO	4-I	111	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CeO_2	4-I	111	111	-	-	-	113	115	119	-	121	-	124-128	-	-	-
Ce_2O_3	4-I	111	-	-	-	-	-	117	-	-	-	-	-	-	-	-
Cerium (di-)oxide + Magnesium oxide	4-I	-	-	-	-	-	-	-	673	-	-	-	-	-	-	-
Cerium (di-)oxide + Uranium oxides	4-I	675	-	-	-	-	-	-	677	-	-	-	-	-	-	-
Cerium phosphide (CeP)	5	635	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-platinum intermetallics ($CePt_2$)	6-I	662	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium selenides																
CeSe	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_3Se_4	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium silicide ($CeSi_2$)	6-I	523	523-524	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-silver intermetallics																
CeAg	6-I	662	662	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeAg_2$	6-I	-	662	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeAg_3$	6-I	-	662	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium stannides																
$CeSn_3$	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2Sn	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2Sn_3	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium sulfides																
CeS	5	667	667	-	-	-	670	672	674	-	676	-	-	-	-	678
CeS_2	5	667	667	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_2S_3	5	667	667	-	-	-	-	672	674	-	676	-	-	-	-	-
Ce_3S_4	5	667	667	-	-	-	-	-	-	-	-	-	-	-	-	678
Cerium tellurides																
$CeTe_2$	6-I	636	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_3Te_4	6-I	636	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium-thallium intermetallics																
CeTl	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
$CeTl_3$	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
Ce_3Tl	6-I	-	663	-	-	-	-	-	-	-	-	-	-	-	-	-
Cerium vanadate (Ce_2O_3 V_2O_5) .	4-II	-	-	-	-	-	-	-	-	-	1490	-	-	-	-	-
Cermets (also see individual cermets)																
Aluminum-chromium-molybdenum cermets	6-II	930	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum-nickel-titanium cermets	6-II	925	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Cermets (also see individual cermets) (cont.)																
Aluminum oxide + Aluminum cermet	6-II	-	-	-	-	-	-	-	-	-	729	-	-	-	-	-
Aluminum oxide + Chromium cermet	6-II	731	-	-	-	-	-	-	911	-	733	-	735	-	-	-
Aluminum oxide + Chromium + Molybdenum cermet	6-II	737	-	-	-	-	-	-	-	-	739	-	-	-	-	-
Aluminum oxide + Iron cermet	6-II	-	-	-	-	-	-	-	-	-	741	-	-	-	-	-
Aluminum oxide + Titanium (di-)oxide + Chromium + Molybdenum cermet	6-II	-	-	-	-	-	-	-	-	-	-	-	747	-	-	-
Aluminum oxide + Tungsten + Chromium cermet	6-II	-	-	-	-	-	-	-	-	-	743	-	745	-	-	-
Barium oxide + Strontium oxide + Zirconium cermet	6-II	-	-	-	-	-	-	-	911	-	-	-	-	-	-	-
Beryllium + Beryllium oxide cermet	6-II	751	-	-	-	751	-	753	757	-	762	-	-	-	-	764-766
Beryllium oxide + Beryllium cermet	6-II	-	-	-	-	751	-	755	760	-	762	-	-	-	-	-
Beryllium oxide + Beryllium + Molybdenum cermet	6-II	-	-	-	-	-	-	768	770	-	772	-	-	-	-	-
Beryllium oxide + Beryllium + Silicon cermet	6-II	-	-	-	-	-	-	-	774	-	776	-	-	-	-	-
Beryllium oxide + Molybdenum cermet	6-II	-	-	-	-	-	-	778	-	-	-	-	-	-	-	-
Beryllium oxide + Niobium cermet	6-II	780	-	-	-	-	-	-	-	-	782	-	-	-	-	-
Boron carbide + Iron cermet	5-II	928	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium aluminate + Molybdenum (di-) silicide cermet	6-II	-	-	-	-	-	-	-	-	-	784	-	-	-	-	-
Chromium-molybdenum-silicon cermets	6-II	925	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium-silicon-titanium cermets	6-II	925	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium boride + Chromium-molybdenum intermetallic cermet	6-II	913	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium silicide cermets	6-II	-	-	-	-	-	-	-	-	-	915	-	-	-	-	-
Chromium-titanium intermetallics + Copper cermets	6-II	917	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium-titanium intermetallics + Molybdenum cermets	6-II	919	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt-chromium alloys + Titanium (di-)boride cermet	6-II	930	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Cermets (also see individual cermets) (cont.)																
Europium oxide + Iron-chromium alloy cermet . . .	6-II	-	-	-	-	-	-	-	-	-	786	-	-	-	-	-
Hafnium carbide + Zirconium cermet	6-II	-	-	-	-	-	-	-	-	-	852	-	-	-	-	-
Magnesium oxide + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	788	-	-	-	-	-
Molybdenum (di-) silicide + + Copper cermets	6-II	923	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum-silicon-titanium cermet	6-II	930	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silicon carbide + Magnesium oxide + Nickel aluminide cermet	6-II	-	-	-	-	-	-	-	-	-	854	-	-	-	-	-
Silicon carbide + Silicon cermet	6-II	-	-	-	-	-	-	-	856	-	-	-	-	-	-	-
Silicon (di-) oxide + Aluminum cermet	6-II	-	-	-	-	-	-	-	-	-	790	-	-	-	-	-
Sodium fluoride + Beryllium ferride cermet	6-II	-	-	-	-	-	-	-	911	-	-	-	-	-	-	-
Strontium titanate + Cobalt cermet	6-II	-	-	-	-	-	-	-	792	-	-	-	-	-	-	-
Tantalum carbide + Iron cermet	6-II	858	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tantalum carbide + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	860	-	-	-	-	-
Thorium (di-) oxide + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	794
Titanium carbide + Cobalt cermet	6-II	862	-	-	-	-	-	-	911	-	864	-	-	-	-	-
Titanium carbide + Molybdenum + Tungsten cermet .	6-II	-	-	-	-	-	-	-	-	-	866	-	-	-	-	-
Titanium carbide + Nickel cermet	6-II	868	-	-	-	-	-	871	873	-	875-877	-	-	-	-	-
Titanium carbide + Niobium carbide + Nickel cermet . .	6-II	-	-	-	-	-	-	-	911	-	-	-	-	-	-	-
Titanium carbide + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	879	-	-	-	-	-
Titanium nitride + Chromium + + Titanium cermet	6-II	-	-	-	-	-	-	-	-	-	909	-	-	-	-	-
Titanium (mon-) oxide + + Chromium-titanium alloys cermet	6-II	-	-	-	-	-	-	-	-	-	796	-	-	-	-	-
Titanium tungsten (di-) carbide + Cobalt cermet . . .	6-II	-	-	-	-	-			-	-	881	-	-	-	-	-
Titanium tungsten (di-) carbide + Tantalum cermet . .	6-II	-	-	-	-	-			-	-	883	-	-	-	-	-
Tungsten carbide + Chromium-cobalt alloys cermet	6-II	-	-	-	-	-	-	-	-	-	895	-	-	-	-	-

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Cermets (also see individual cermets) (cont.)																
Tungsten carbide + Cobalt cermet	6-II	-	-	-	-	-	-	-	889	-	897-905	-	-	-	-	-
Tungsten carbide + Nickel cermet	6-II	-	-	-	-	-	-	-	-	-	907	-	-	-	-	-
Uranium (mono-) carbide + + Molybdenum cermet . . .	6-II	-	-	-	-	-	-	-	-	-	891	-	-	-	-	-
Uranium (mono-) carbide + + Uranium cermet	6-II	-	-	-	-	-	-	-	-	-	893	-	-	-	-	-
Uranium (di-) oxide + + Chromium cermet	6-II	-	-	-	-	-	798	-	800	-	802	-	-	-	-	-
Uranium (di-) oxide + + Molybdenum cermet . . .	6-II	-	-	-	-	-	804	-	806	-	808	-	-	-	-	-
Uranium (di-) oxide + + Niobium cermet	6-II	-	-	-	-	-	810	-	812	-	-	-	-	-	-	-
Uranium (di-) oxide + Stainless steel cermet	6-II	-	-	-	-	-	814	-	816	-	818	-	-	-	-	-
Uranium (di-) oxide + + Zirconium cermets	6-II	820	-	-	-	-	-	-	822	-	824	-	-	-	-	-
Zirconium (di-) boride cermet	6-II	842	-	-	-	-	844	846	848	-	850	-	-	-	-	-
Zirconium (di-) oxide + + Titanium cermet	6-II	-	-	-	-	-	-	826	828	830	832	-	-	-	-	-
Zirconium (di-) oxide + + Yttrium oxide + Zirconium cermet	6-II	-	-	-	-	-	-	-	834	-	-	-	-	-	-	-
Zirconium (di-) oxide + + Zirconium cermet	6-II	-	-	-	-	-	-	-	-	836	838	-	-	-	-	840
Cesium chloride (CsCl)	5	-	-	-	-	-	-	315	-	-	-	-	-	-	-	-
Chemaco 342	6-II	-	-	-	-	-	-	-	-	-	948	-	-	-	-	-
Chemaco 343	6-II	-	-	-	-	-	-	-	-	-	948	-	-	-	-	-
Chemaco 344	6-II	-	-	-	-	-	-	-	-	-	948	-	-	-	-	-
Chemaco 345	6-II	-	-	-	-	-	-	-	-	-	948	-	-	-	-	-
Chemaco 346	6-II	-	-	-	-	-	-	-	-	-	948	-	-	-	-	-
Chemaco SPZ 325	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chemaco SPZ 326	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chemaco SPZ 327	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chemaco SPZ 327-MS	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chemaco SPZ 329	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chemaco SPZ 330	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chemaco SPZ 331	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chemaco SPZ 332	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Chloromethyoxetane, 3, 3 bis- .	6-II	-	1076	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromalloy W-2 coating on molybdenum-titanium alloys .	6-II	-	-	-	-	-	-	-	-	-	-	-	1505-1509	-	-	-

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Chromium (Cr)	1	410	410	-	-	410	412	414	416	418	420	-	422-426	428-432	-	434
Chromium, electrolytic	1	-	-	-	-	-	412	-	416	-	420	-	-	-	-	-
Chromium + ΣX_i	2-II	873	-	-	-	873	875	-	877	-	-	-	-		-	-
Chromium + Aluminum + ΣX_i . .	2-II	-	-	-	-	-	-	855	-	-	-	-	-	-	-	-
Chromium + Iron	2-I	-	62	-	-	-	64	66	-	-	-	-	-	-	-	-
Chromium + Iron + ΣX_i	2-II	857	-	-	-	-	-	859	-	-	861	-	-	-	-	-
Chromium + Molybdenum . . .	2-I	-	-	-	-	-	-	-	-	-	68	-	-	-	-	-
Chromium + Molybdenum + ΣX_i .	2-II	863	-	-	-	-	-	-	-	-	865	-	-	-	-	-
Chromium + Nickel	2-I	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-
Chromium + Nickel + ΣX_i . .	2-II	-	867	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium + Silicon	2-I	72	-	-	-		-	-	-	-	-	-	-	-	-	-
Chromium + Silicon + ΣX_i . . .	2-II	869	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium + Tungsten	2-I	74	-	-	-	-	-	-	-	-	76	-	-	-	-	-
Chromium + Tungsten + ΣX_i . .	2-II	871	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium alloys (special designations)																
Ferrochromium	2-II	-	-	-	-	-	-	859	-	-	-	-	-	-	-	-
Aluminothermic chromium .	2-II	-	-	-	-	-	-	859	-	-	-	-	-	-	-	-
Chromium aluminides																
CrAl	6-I	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-
$CrAl_3$	6-I	-	-	-	-	-	-	-	-	-	5	-	-	-	-	-
Cr_3Al	6-I	-	3	-	-	-	-	-	-	-	5	-	-	-	-	-
Chromium beryllide ($CrBe_2$) . .	6-I	-	158	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium borides																
CrB	6-I	164	164	-	-	-	-	166	-	-	-	-	-	-	-	-
CrB_2	6-I	164	164	-	-	-	-	166	-	-	168	-	-	-	-	-
Cr_2B	6-I	-	164	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr_3B_4	6-I	-	164	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr_4B	6-I	-	164	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr_5B_3	6-I	-	164	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (di-)boride + + Chromium-molybdenum intermetallic cermet	6-II	913	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (di-)boride + + Titanium (di-)boride	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium (di-)boride + + Vanadium (di-)boride . . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium carbides																
CrC	5	-	39	-	-	-	-	-	-	-	-	-	-	-	..	-
Cr_3C_2	5	39	39	-	-	-	-	41	-	-	45	-	-	-	-	-
Cr_4C	5	-	-	-	-	-	-	43	-	-	-	-	-	-	-	-
Cr_5C_2	5	-	-	-	-	-	-	43	-	-	-	-	-	-	-	-
Cr_7C_3	5	-	39	-	-	-	-	43	-	-	-	-	47	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Chromium carbides (cont.)																
$Cr_{23}C_6$	5	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium carbide-cobalt blend on iron	6-II	-	-	-	-	-	-	-	-	-	-	1407	1409	-	-	-
Chromium-molybdenum silicides																
$(Cr, Mo)Si_2$	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$(Cr, Mo)_3Si$	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium-molybdenum-silicon cermets	6-II	925	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium-niobium intermetallics (Cr_2Nb)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium nitrides																
CrN	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr_2N	5		621													
Chromium (sesqui-)oxide (Cr_2O_3)	4-I	-	-	-	-	-	130	132	-	-	134	-	136-138	140	-	-
Chromium (sesqui-)oxide + + Aluminum oxide	4-I	-	-	-	-	-	679	-	-	-	681	-	683	-	-	-
Chromium (sesqui-)oxide + + Molybdenum (di-)silicide . .	5	-	-	-	-	-	-	-	-	-	-	-	769	-	-	-
Chromium (sesqui-)oxide + + Nickel (mon-)oxide	4-I	-	-	-	-	-	685	-	-	-	-	-	-	-	-	-
Chromium (sesqui-)oxide + + Niobium (pent-)oxide	4-I	-	-	-	-	-	687	-	-	-	-	-	-	-	-	-
Chromium (sesqui-)oxide + + Titanium-chromium intermetallics	5	-		-	-	-	-	-	-	-	-	-	771-773	775	-	-
Chromium (sesqui-)oxide + + Yttrium oxide	4-I	-	-	-	-	-	-	-	-	-	-	-	689	-	-	-
Chromium phosphides (CrP) . .	5	635	635	-	-	-	639	-	-	-	-	-	-	-	-	-
Chromium silicides																
CrSi	6-I	-	381	-	-	-	383	385	-	-	389	-	-	-	-	-
$CrSi_2$	6-I	-	381	-	-	-	383	385	387	-	389	-	-	-	-	-
Cr_3Si	6-I	-	381	-	-	-	-	385	-	-	389	-	391-393	395	-	-
Cr_3Si_2	6-I	-	-	-	-	-	-	-	-	-	389	-	-	-	-	-
Cr_5Si	6-I	-	381	-	-	-	-	-	-	-	-	-	-	-	-	-
Cr_5Si_3	6-I	-	-	-	-	-	-	385	-	-	-	-	-	-	-	-
Chromium silicide cermets . .	6-II	-	-	-	-	-	-	-	-	-	915	-	-	-	-	-
Chromium (di-)silicide + + Molybdenum (di-)silicide . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium-silicon-titanium cermets	6-II	925	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium-tantalum intermetallics (Cr_3Ta_2)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Chromium-titanium intermetallics + Chromium (sesqui-)-oxide	5	-	-	-	-	-	-	-	-	-	926	-	928-930	932	-	-
Chromium-titanium intermetallics + Copper cermets	5	917	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium-titanium intermetallics + Molybdenum cermets	6-II	919	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium zirconate ($Cr_2O_3 \cdot ZrO_2$)	4-II	-	-	-	-	-	-	-	-	-	1508	-	-	-	-	-
Chromium-zirconium intermetallics (Cr_2Zr)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Chronin	2-I	-	-	-	-	-	-	-	-	-	70	-	-	-	-	-
Chrycote coating on copper	6-II	-	-	-	-	-	-	-	-	-	-	-	1499	-	-	-
Clad steel	6-II	-	-	-	-	-	-	-	-	-	1267	-	-	-	-	-
Clinoenstatite	4-II	-	-	-	-	-	-	-	-	-	1295	-	-	-	-	-
Coatings																
Aluminide on niobium	6-II	-	-	-	-	-	-	-	-	-	-	-	1435-1437	1439	-	-
Aluminide on titanium	6-II	-	-	-	-	-	-	-	-	-	-	-	1447-1449	1451	-	-
Aluminized-silicone paint on titanium	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1497	-	-
Aluminum on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1287	-	-
Aluminum oxide on AISI 446	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1349	-	-
Aluminum phosphate on nickel	6-II	-	-	-	-	-	-	-	-	-	-	-	1431	-	-	-
Barium titanate on niobium-zirconium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1371	-	-	-
Boron on molybdenum	6-II	-	-	-	-	-	-	-	-	-	-	-	1289	-	-	-
Boron on niobium-zirconium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1291	-	-	-
Boron carbide on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1403	1405	-	-
Calcium titanate on niobium-zirconium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1371	-	-	-
Carbon on molybdenum	6-II	-	-	-	-	-	-	-	-	-	-	1293	1295		-	-
Chromalloy W-2 on molybdenum-titanium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1505-1509	-	-	-
Chromium carbide-cobalt blend on iron	6-II	-	-	-	-	-	-	-	-	-	-	1407	1409	-	-	-
Chrycote on copper	6-II	-	-	-	-	-	-	-	-	-	-	-	1499	-	-	-
Cobalt oxide on tantalum	6-II	-	-	-	-	-	-	-	-	-	-	-	1373-1376	-	-	-
Copper on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1301	-	-
Dow-Corning XP-310 on Ti-75A (AMS 4901)	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1497	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Coatings (cont.)																
Durak MG on molybdenum-titanium alloy	6-II	-	-	-	-	-	-	-	-	-	-	-	1501-1503	-	-	-
Enamel on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1515	-	-	-
Enamel on AISI 321	6-II	-	-	-	-	-	-	-	-	-	-	-	1513	-	-	-
Enamel on Inconel	6-II	-	-	-	-	-	1511	-	-	-	-	-	-	-	-	-
Gold on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1307	-	-
Gold on titanium	6-II	-	-	-	-	-	-	-	-	-	-	-	1303	1305	-	-
Graphite, pyrolytic, on tantalum	6-II	-	-	-	-	-	-	-	-	-	-	-	1297-1299	-	-	-
Hafnium (di-)oxide on tungsten	6-II	-	-	-	-	-	-	-	-	-	-	-	1377-1379	-	-	-
Hastelloy C on AISI 310 . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1337	-	-	-
Hastelloy X on AISI 310 . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1339	-	-	-
Iron(ic) oxide on stellite no. 25 (L-605)	6-II	-	-	-	-	-	-	-	-	-	-	-	1381-1383	-	-	-
Iron titanate on niobium-zirconium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1385	-	-	-
Kennametal K-151A on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1491	-	-	-
Kennametal K-162B on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1493	-	-	-
Magnesium fluoride on quartz	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1425	1427	-
Molybdenum on iron	6-II	-	-	-	-	-	-	-	-	-	-	1309	1311	-	-	-
NBS coating A-418 on Inconel	6-II	-	-	-	-	-	-	-	-	-	-	-	1361-1363	-	-	-
NBS coating A-418 on stainless steel	6-II	-	-	-	-	-	-	-	-	-	-	-	1365-1367	-	-	-
NBS coating N-143 on Inconel	6-II	-	-	-	-	-	-	-	-	-	-	-	1353-1355	-	-	-
NBS coating N-143 on stainless steel	6-II	-	-	-	-	-	-	-	-	-	-	-	1357-1359	-	-	-
Nickel aluminide on Inconel .	6-II	-	-	-	-	-	-	-	-	-	-	-	1453-1455	1457	-	-
Nickel chromite on niobium-zirconium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1387	-	-	-
Nickel-chromium alloys on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1333	1335	-	-
Niobium aluminide on niobium	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1459	-	-
Platinum on copper	6-II	-	-	-	-	-	-	-	-	-	-	-	1313	-	-	-
Platinum on quartz	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1317	1319	-
Platinum on stainless steel .	6-II	-	-	-	-	-	-	-	-	-	-	-	1315	-	-	-

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Coatings (cont.)																
Rokide A on AISI 446	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1351	-	-
Rokide C on titanium alloy Ti-6 Al-4 V	6-II	-	-	-	-	-	-	-	-	-	-	-	1345-1347	-	-	-
Silicide on molybdenum . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1467-1469	1471	-	-
Silicide on tantalum.	6-II	-	-	-	-	-	-	-	-	-	-		1473-1475	147[illegible]	-	-
Silicide on titanium	6-II	-	-	-	-	-	-	-	-	-	-	-	1479-1481	1483	-	-
Silicide on tungsten	6-II	-	-	-	-	-	-	-	-	-	-	-	1485-1487	1489	-	-
Silicon carbide on niobium-zirconium alloys.	6-II	-	-	-	-	-	-	-	-	-	-	-	1415	-	-	-
Silicon carbide on tantalum .	6-II	-	-	-	-	-	-	-	-	-	-	-	1411-1413	-	-	-
Silicon (mon-)oxide on aluminum	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1389	-	-
Silicon (di-)oxide on aluminum	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1391	-	-
Silicone on Inconel	6-II	-	-	-	-	-	1495	-	-	-	-	-	-	-	-	-
Silver on AISI 321.	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1321	-	-
Silver on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1323	-	-
Silver sulfide on silver . . .	6-II	-	-	-	-	-	-	-	-	-	-	1431	1433	-	-	-
Strontium titanate on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1393	-	-	-
Tantalum aluminide on tantalum	6-II	-	-	-	-	-	-	-	-	-	-	-	1461-1463	1465	-	-
Tantalum carbide on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1417	1419	-	-
Titanium (di-)oxide and aluminum on molybdenum. .	6-II	-	-	-	-	-	-	-	-	-	-	-	1395	-	-	-
Tungsten on Inconel X. . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1329	1331	-	-
Tungsten on iron	6-II	-	-	-	-	-	-	-	-	-	-	1325	1327	-	-	-
Tungsten-cobalt alloys on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1341	1343	-	-
Tungsten carbide on iron . .	6-II	-	-	-	-	-	-	-	-	-	-	1421	1423	-	-	-
Zirconium (di-)oxide on Inconel	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1397	-	-
Zirconium (di-)oxide on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1399	1401	-	-
Cobalt (Co)	1	436	436	-	-	-	438	440	442	-	444	446	448-450	-	-	-
Cobalt + Chromium + ΣX_i . . .	2-II	879, 882	879	-	-	-	-	884	886-888	890	892-906	-	908-914	916	-	-
Cobalt + Copper + ΣX_i	2-II	-	918	-	-	-	920	-	-	-	-	-	-	-	-	-
Cobalt + Gold	2-I	-	-	-	-	-	78	-	-	-	-	-	-	-	-	-
Cobalt + Gold + ΣX_i	2-II	-	922	-	-	-	924	-	-	-	-	-	-	-	-	-

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Cobalt + Iron	2-I	-	-	-	-	80	82	84	-	-	-	-	86	-	-	88
Cobalt + Iron + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	926-930	-	-	-	-	-
Cobalt + Manganese + ΣX_i . . .	2-II	-	-	-	-	-	-	-	-	-	932	-	-	-	-	-
Cobalt + Nickel	2-I	92	-	-	-	90	-	-	-	-	-	-	94	-	-	96
Cobalt + Nickel + ΣX_i	2-II	-	-	-	-	-	-	-	934	936	938	-	-	-	-	-
Cobalt + Palladium + ΣX_i . . .	2-II	-	940	-	-	-	942-944	-	-	-	-	-	-	-	-	-
Cobalt + Vanadium	2-I	-	-	-	-	-	-	-	-	-	98	-	-	-	-	-
Cobalt alloys (special designations)																
Hastelloy 25	2-II	-	-	-	-	-	-	-	-	-	898	-	-	-	-	-
Haynes 152	2-II	-	-	-	-	-	-	-	-	-	898	-	-	-	-	-
HE 1049	2-II	-	-	-	-	-	-	884	888	-	900	-	-	-	-	-
J-1570	2-II	-	-	-	-	-	-	-	934	-	938	-	-	-	-	-
Jessop G32	2-II	879	-	-	-	-	-	-	888	-	892	-	-	-	-	-
Lohm	2-I	-	-	-	-	-	-	-	138	-	-	-	-	-	-	-
MAR-M302	2-II	-	-	-	-	-	-	-	-	-	898	-	-	-	-	-
PWA-653-A	2-II	-	-	-	-	-	-	-	-	-	898	-	-	-	-	-
Rexalloy 33	2-II	-	-	-	-	-	-	-	-	-	906	-	-	-	-	-
S-816	2-II	-	-	-	-	-	-	-	888, 934	890, 936	896, 938	-	-	-	-	-
SM-302	2-II	-	-	-	-	-	-	-	-	-	898	-	-	-	-	-
Stellites (see Stellite)																
V-36	2-II	-	-	-	-	-	-	-	-	-	896	-	-	-	-	-
Vitallium	2-II	-	879	-	-	-	-	-	-	-	894	-	-	-	-	-
WI-52	2-II	-	-	-	-	-	-	-	888	-	-	-	-	-	-	-
X-40	2-II	-	-	-	-	-	-	-	888	-	-	-	-	-	-	-
X-63	2-II	-	-	-	-	-	-	-	888	-	-	-	-	-	-	-
Cobalt aluminates																
$CoO \cdot Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	995	-	-	-	-	-
$Co_2O_3 \cdot Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	995	-	-	-	-	-
Cobalt aluminide (CoAl)	6-I	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-
Cobalt beryllide (CoBe)	6-I	-	158	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt blue glass	4-II	-	-	-	-	-	-	-	-	-	-	-	1847	1849	1851	-
Cobalt (mono-)boride (CrB) . .	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt carbide (Co_3C)	5	-	294	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt-chromium alloys + Titanium (di-)boride cermet .	6-II	-	930	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt-chromium intermetallics (CoCr)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt ferrite ($CoO \cdot Fe_2O_3$). . .	4-II	-	-	-	-	-	1071	1073	-	-	-	-	-	-	-	-
Cobalt-lead silicate glass . . .	4-II	-	-	-	-	-	1735	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Cobalt-molybdenum intermetallics (CoMo)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt-niobium intermetallics (Co_3Nb_2)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt oxides																
CoO	4-I	-	-	-	-	-	-	142	-	-	146	-	-	-	-	-
Co_3O_4	4-I	-	-	-	-	-	-	144	-	-	-	-	-	-	-	-
Cobalt oxide coated tantalum . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1373-1375	-	-	-
Cobalt(ous) oxide + Copper(ic) oxide	4-I	-	-	-	-	-	-	691	-	-	-	-	-	-	-	-
Cobalt(ous) oxide + Nickel (mon-) oxide	4-I	-	-	-	-	-	-	693	-	-	-	-	-	-	-	-
Cobalt (ortho-) phosphate ($3\,CoO \cdot P_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1169	-	-	-	-	-
Cobalt phosphide (Co_2P)	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt silicides																
CoSi	6-I	-	397	-	-	-	399	401	529	-	403	-	-	-	-	-
$CoSi_2$	6-I	-	397	-	-	-	-	-	-	-	-	-	-	-	-	-
$CoSi_3$	6-I	-	397	-	-	-	-	-	-	-	-	-	-	-	-	-
Co_2Si	6-I	-	397	-	-	-	-	-	-	-	-	-	-	-	-	-
Co_3Si	6-I	-	397	-	-	-	-	-	-	-	403	-	-	-	-	-
Cobalt-titanium intermetallics																
CoTi	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
$CoTi_2$	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt-tungsten intermetallics (CoW)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt-zirconium intermetallics (Co_4Zr)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Coke	1	-	-	-	-	-	85	-	87	-	-	-	-	-	-	-
Coke, graphitized	1	105	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Composite systems																
Alumina bubbles - graphite fibers system	6-II	-	-	-	-	-	-	-	1279	-	-	-	-	-	-	-
Dexiglas paper - aluminum foil - graphite fiber system .	6-II	-	-	-	-	-	-	-	1283	-	-	-	-	-	-	-
Fiberfrax paper - tantalum shield - graphite fibers system	6-II	-	-	-	-	-	-	-	1285	-	-	-	-	-	-	-
Graphite fibers - tantalum shield system	6-II	-	-	-	-	-	-	-	1281	-	-	-	-	-	-	-
Concrete	5	-	-	-	-	-	-	-	1027	-	-	-	-	-	-	-
Conolon N-1 laminate	6-II	-	-	-	-	-	-	-	-	-	1174	-	-	-	-	-
Container glasses	4-II	-	-	-	-	-	-	-	-	-	-	-	1833	1835	1837	-
Contracid	2-II	-	-	-	-	-	-	-	1261	-	-	-	-	-	-	-
Copolyvinyl chloride + Acetate .	6-II	-	-	-	-	-	-	-	-	-	950	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Copper (Cu)	1	452	452	452	452	452	454	456	458	460	462	464	466-470	472-477	-	479
Copper, commercial coalesced .	1	452	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper DS (British aircraft material spec.)	1	-	-	-	-	-	-	-	-	-	-	-	-	72	-	-
Copper, electrolytic	1	452	452	-	-	-	-	456	-	-	462	-	466	472	-	-
Copper, electrolytic tough pitch (Fed. Spec. QQC-502)	1	452	-	-	-	-	-	456	458	-	462	464	468	474	-	-
Copper, electrolytic tough pitch (Fed. Spec. QQC-576)	1	-	-	-	-	-	-	456	458	-	462	464	468	474	-	-
Copper, OFHC	1	-	-	-	-	-	-	-	458	460	-	-	-	-	-	-
Copper, tellurium	2-I	-	-	-	-	-	-	-	-	-	152	-	-	-	-	-
Copper coated with chrycote . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1499	-	-	-
Copper coated with platinum coating	6-II	-	-	-	-	-	-	-	-	-	-	-	1313	-	-	-
Copper coating on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1301	-	-
Copper + Aluminum	2-I	100	-	-	-	-	102-104	106	108	-	110	-	-	-	-	-
Copper + Aluminum + ΣX_i . . .	2-II	-	-	-	-	-	946	-	948	-	950	952	954-958	960	-	-
Copper + Beryllium	2-I	-	-	-	-	-	-	112	-	-	-	-	-	-	-	-
Copper + Chromium	2-I	-	-	-	-	-	114	-	116	-	-	-	-	-	-	-
Copper + Chromium + ΣX_i . . .	2-II	-	-	-	-	-	962	-	964	-	-	-	-	-	-	-
Copper + Cobalt	2-I	-	-	-	-	-	-	-	118	-	-	-	-	-	-	-
Copper + Cobalt + ΣX_i	2-II	-	966	-	-	-	968	-	970-972	-	-	-	-	-	-	-
Copper + Gold																
$CuAu_3$	2-I	-	-	-	-	-	-	204	-	-	206	-	-	-	-	-
Cu_3Au	2-I	-	-	-	-	-	-	204	-	-	206	-	-	-	-	-
Copper + Iron	2-I	-	-	-	-	-	120	122	124	-	-	-	-	-	-	-
Copper + Iron + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	-	-	974	-	-	-
Copper + Lead	2-I	126	-	-	-	-	-	-	-	-	128	-	-	-	-	-
Copper + Lead + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	976	-	-	-	-	-
Copper + Manganese	2-I	-	-	-	-	-	130	132	-	-	-	-	-	-	-	-
Copper + Manganese + ΣX_i . . .	2-II	-	-	-	-	-	978	-	980	-	-	-	-	-	-	-
Copper + Nickel	2-I	-	-	-	-	-	134	136	138	-	-	-	-	-	-	-
Copper + Nickel + ΣX_i	2-II	-	-	-	-	-	982	-	984-986	-	988	-	-	-	-	-
Copper + Palladium	2-I	-	-	-	-	-	140	-	142	-	-	-	-	-	-	-
Copper + Palladium + ΣX_i . . .	2-II	-	990	-	-	-	992	-	-	-	-	-	-	-	-	-
Copper + Platinum	2-I	-	-	-	-	-	144	-	-	-	-	-	-	-	-	-
Copper + Silicon	2-I	-	-	-	-	-	146	-	-	-	-	-	-	-	-	-
Copper + Silicon + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	994	-	-	-	-	-
Copper + Silver	2-I	-	-	-	-	-	-	-	-	-	148	-	-	-	-	-
Copper + Tellurium	2-I	150	-	-	-	-	-	-	-	-	152	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Copper + Tin	2-I	154	-	-	-	-	156	-	158	-	160	-	162	-	-	-
Copper + Tin + ΣX_i	2-II	-	-	-	-	-	-	-	996	-	998	-	-	-	-	-
Copper + Titanium	2-I	164	164	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper + Uranium	2-I	166	166	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper + Zinc	2-I	168	-	-	-	-	170	172	-	174	-	-	176-180	182	-	-
Copper + Zinc + ΣX_i	2-II	-	-	-	-	-	-	-	1000	-	1002-1004	-	-	-	-	-
Copper + Zirconium	2-I	184	-	-	-	-	186	-	188	-	-	-	-	-	-	-
Copper + Zirconium + ΣX_i	2-II	-	-	-	-	-	1006	-	1008	-	-	-	-	-	-	-
Copper alloys (special designations)																
Admiralty nickel	2-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
Aterite	2-II	-	-	-	-	-	-	-	-	-	1004	-	-	-	-	-
Manganin	2-II	-	-	-	-	-	978	-	-	-	-	-	-	-	-	-
Monels (see Monel)																
M[illegible]5	2-II	-	-	-	-	-	-	-	1000	-	-	-	-	-	-	-
Ms-[illegible]	2-II	-	-	-	-	-	-	-	1000	-	-	-	-	-	-	-
Navy [illegible]	2-II	-	-	-	-	-	-	-	996	-	-	-	-	-	-	-
Porosint	2-I	-	-	-	-	-	-	-	158	-	-	-	-	-	-	-
Tempaloy 836	2-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
Tempaloy 841	2-II	-	-	-	-	-	-	-	-	-	950	-	-	-	-	-
Copper ferrites																
$CuO \cdot Fe_2O_3$	4-II	-	-	-	-	-	1075	1077	-	-	-	-	-	-	-	-
$Cu_xFe_{3-x}O_4$	4-II	-	-	-	-	-	-	1077	-	-	-	-	-	-	-	-
Copper indium telluride ($CuInTe_2$)	6-I	-	-	-	-	-	-	-	572	-	-	-	-	-	-	-
Copper oxide (CuO)	4-I	-	-	-	-	-	148	150	-	-	-	-	-	-	-	152
Copper silver indium tellurides ($Ag_xCu_{1-x}InTe_2$)	6-I	-	-	-	-	-	-	-	640	-	-	-	-	-	-	-
Cordierite	4-II	-	-	-	-	-	1298	1300	1302	-	1304-1308	-	-	-	-	-
Cordierite 202	4-II	-	-	-	-	-	-	-	1302	-	-	-	-	-	-	-
Cordierite, barium-	4-II	-	-	-	-	-	-	-	-	-	1217-1221	-	-	-	-	-
Cordierite, lead-	4-II	-	-	-	-	-	-	-	-	-	1252-1254	-	-	-	-	-
Cordierite, lead-barium	4-II	-	-	-	-	-	-	-	-	-	1256-1258	-	-	-	-	-
Cordierite bodies	4-II	-	-	-	-	-	-	-	-	-	1310	-	-	-	-	-
Corning 0080 glass	4-II	-	-	-	-	-	-	-	1795	1793	-	-	-	-	-	-
Corning 1723 glass	4-II	-	-	-	-	-	-	1675	-	1677	-	-	1679	1681	1683-1685	-
Corning 7740 glass	4-II	-	-	-	-	-	-	1697	-	1701	-	-	1705	1709	1711-1713	-
Corning 7900 glass	4-II	-	-	-	-	-	-	1655	-	1661	-	-	1665	1669	1671-1673	-

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Corning 7940 glass	4-II	-	-	-	-	-	-	1655	-	-	-	-	1665	1669	1671-1673	-
Corning 8325 glass	4-II	-	-	-	-	-	-	-	-	1687	-	-	-	-	-	-
Corning 8362 glass	4-II	-	-	-	-	-	-	-	.	1749	-	-	-	-	-	-
Corning 9752 glass	4-II	-	-	-	-	-	-	-	-	-	-	-	1847	1849	1851	-
Corundum	4-I	-	-	-	-	-	-	8	-	-	22	-	-	-	-	-
Cresol resin	6-II	-	-	-	-	-	-	1004	-	-	-	-	-	-	-	-
Cristobalite	4-I	-	-	-	-	-	-	-	-	-	367	-	-	-	-	-
Crown glass	4-II	1693	1693	-	-	-	-	1697	-	-	1723	-	-	-	-	-
Crystolon-R	5	-	-	-	-	-	-	-	-	-	-	-	131, 135	-	-	-
Curium (Cm)	1	481	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D																
Dexiglas paper - aluminum foil - graphite fibers composite system	6-II	-	-	-	-	-	-	-	1283	-	-	-	-	-	-	-
Diall 50-01 resin	6-II	-	-	-	-	-	1111	-	-	-	-	-	-		-	-
Diall 50-51 resin	6-II	-	-	-	-	-	1111		-	-	-	-			-	-
Diall 50-52 resin	6-II	-	-	-	-	-	1111	-	-	-	-	-	-	-	-	-
Diall 52-01 resin	6-II	-	-	-	-	-	1111	-	-	-	-	-	-	-	-	-
Diall 52-20-30 resin	6-II	-	-	-	-	-	1111	-	-	-	-	-	-	-	-	-
Diallylphthalate, reinforced . .	6-II	-	-	-	-	-	1111	-	-	-	-	-	-	-	-	-
Diamond	1	392	392	-	-	392	-	394	396	-	398	-	-	400	-	-
Dihydroperfluorobutyl acrylate, 1, 1-	6-II	1051	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dow-Corning XP-310 on Ti-75A (AMS 4901)	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1497	-	.
Durak MG coating on molybdenum-titanium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1501-1503	-	-	-
Duranickel 301	2-II	-	-	-	-	-	-	-	-	-	1117	-	-	-	.	-
Durchy	5	-	-	-	-	-	-	-	-	-	-	-	821	-	-	-
Dures 16274	6-II	-	-	-	-	-	982	-	-	-	-	-	-	-	-	-
Dures 16694	6-II	-	-	-	-	-	1111	-	-	-	-	-	-	-	-	-
Duroid 5600	6-II	1097	-	-	-	-	-	-	1099	-	-	-	-	-	-	-
Dynakon rod F	6-II	-	-	-	-	-	-	-	-	-	1109	-	-	-	-	-
Dynakon sheet A3A	6-II	-	-	-	-	-	-	-	-	-	1109	-	-	-	-	-
Dysprosia	4-I	154	154	-	-	-	-	156	-	-	158	-	-	-	-	-
Dysprosium (Dy)	1	483	483	483	483	483	485	-	-	-	-	-	-	-	-	487
Dysprosium + Tantalum + ΣX_i .	2-II	-	-	-	-	-	-	-	-	-	1010	-	-	-	-	-
Dysprosium aluminate (Dy_2O_3 $2\ Al_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	997	-	-	-	-	-

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Dysprosium borides																
DyB_4	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DyB_6	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dysprosium carbide (DyC_2) . .	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dysprosium-cobalt intermetallics		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$CyCo_2$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$DyCo_5$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dysprosium hydride (DyH_3) . .	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dysprosium niobate ($Dy_2O_3 \cdot Nb_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1123	-	-	-	-	-
Dysprosium oxide (Dy_2O_3) . . .	4-I	154	154	-	-	-	-	156	-	-	158	-	-	-	-	-
Dysprosium oxide + Cerium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	695	-	-	-	-	-
Dysprosium oxide + Uranium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	697	-	-	-	-	-
Dysprosium oxide + Zirconium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	699	-	-	-	-	-
Dysprosium silicide ($DySi_2$) . .	6-I	523	524	-	-	-	527	-	-	-	-	-	-	-	-	-
Dysprosium sulfides																
DyS_2	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dy_2S_3	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
Dy_5S_7	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
E																
Eastman Intran glasses	4-II	-	-	-	-	-	-	1853	-	-	-	-	-	-	-	-
Eccofoam	6-II	1084	-	-	-	-	-	-	1080	-	-	-	-	-	-	-
Elastomer, isocyanate polyester	6-II	960	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electroconducting glass	4-II	-	-	-	-	-	-	-	-	-	-	-	1839	1841	1843-1845	-
Electroconducting glass 547-26 .	4-II	-	-	-	-	-	-	-	-	-	-	-	1839	1841	1843-1845	-
Electroconducting glass LOF-81E-19778	4-II	-	-	-	-	-	-	-	-	-	-	-	1839	1841	1843-1845	-
Electroconducting glass LOF-PB-19195	4-II	-	-	-	-	-	-	-	-	-	-	-	1839	1841	1843-1845	-
Enamel on Inconel	6-II	-	-	-	-	-	1511	-	-	-	-	-	-	-	-	-
Enamel, rinsed-Mason black, on AISI 321	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1515	-	-
Enamel, spinel, coating on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1515	-	-	-
Enstatite	4-II	-	-	-	-	-	-	-	-	-	1295	-	-	-	-	-
Epoxide	6-II	1006	-	-	-	-	-	-	1010	-	1012	-	-	-	-	-
Epoxide, Hysol 6000-OP	6-II	1006	-	-	-	-	-	-	1010	1082	1012	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Epoxide, reinforced	6-II	-	-	-	-	-	-	1117	1120	1220	1122-1124	-	-	-	-	-
Epoxy, DER332	6-II	-	-	-	-	-	-	1008	-	-	-	-	-	-	-	-
Epoxy and plyophen copolymer resin, reinforced	6-II	-	-	-	-	-	-	-	1218	-	-	-	-	-	-	-
Epoxy resin	6-II	-	-	-	-	-	-	1008	-	-	-	-	-	-	-	-
Epoxy resin, reinforced . . .	6-II	-	-	-	-	-	-	1115-1117	1120	1220	1122-1124	-	-	-	-	-
Erbia	4-I	160	-	-	-	-	-	162	-	-	164	-	166	-	-	-
Erbium (Er)	1	489	489	489	489	489	491	493	-	-	495	-	497	-	-	499
Erbium borides																
ErB_4	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ErB_6	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium carbide (ErC_2)	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium-cobalt intermetallics ($ErCo_5$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium-gallium intermetallics ($ErGa_2$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium hydride (ErH_3)	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium-manganese intermetallics ($ErMn_2$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium-nickel intermetallics ($ErNi_5$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium oxide (Er_2O_3)	4-I	160	-	-	-	-	-	162	-	-	164	-	166	-	-	-
Erbium selenides																
ErSe	6-I	-	-	-	-	-	367	-	-	-	-	-	-	-	-	-
Er_2Se_3	6-I	-	-	-	-	-	367	-	-	-	-	-	-	-	-	-
Erbium-silver intermetallics (ErAg)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium sulfides																
ErS	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Er_2S_3	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
Er_3S_7	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
Erbium tellurides (Er_2Te_3) . . .	6-I	-	-	-	-	-	638	-	-	-	-	-	-	-	-	-
Ethyl cellulose	6-II	-	-	-	-	-	-	-	-	-	948	-	-	-	-	-
Etruria Marl	4-I	-	-	-	-	-	-	-	-	-	802-812	-	-	-	-	-
Eucryptite	4-II	-	-	-	-	-	-	-	-	-	1270	-	-	-	-	-
Europium (Eu)	1	501	501	501	501	501	503	505	-	-	-	-	-	-	-	507
Europium (hexa-)boride (EuB_6) .	6-I	296	-	-	-	-	300	-	-	-	-	-	-	-	-	-
Europium oxide (Eu_2O_3)	4-I	168	168	-	-	-	-	170	-	-	172	-	-	-	-	-
Europium oxide + Iron-chromium alloy cermet	6-II	-	-	-	-	-	-	-	-	-	786	-	-	-	-	-
Europium silicide ($EuSi_2$) . . .	6-I	523	524	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Europium sulfides																
EuS	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EuS_2	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eu_3S_4	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Evanohm	2-II	1119	-	-	-	-	1124	-	-	-	-	-	-	-	-	-
F																
Fabrics																
Fiber glass	6-II	-	-	-	-	-	-	-	-	1269	-	-	-	-	-	-
Graphite	6-II	-	-	-	-	-	-	-	-	1271	-	-	-	-	-	-
Nylon	6-II	-	-	-	-	-	-	-	-	1273	-	-	-	-	-	-
Organic fiber	6-II	-	-	-	-	-	-	-	-	1275	-	-	-	-	-	-
Silica	6-II	-	-	-	-	-	-	-	-	1277	-	-	-	-	-	-
Feldspars																
Barium	4-II	-	-	-	-	-	-	1205	-	-	1207	-	-	-	-	-
Calcium	4-II	-	-	-	-	-	-	-	-	-	1235	-	-	-	-	-
Lithium	4-II	-	-	-	-	-	-	-	1266	-	1270	-	-	-	-	-
Lithium-potassium	4-II	-	-	-	-	-	-	-	-	-	1283	-	-	-	-	-
Sodium	4-II	-	-	-	-	-	-	-	-	-	1326	-	-	-	-	-
Sodium-potassium	4-II	-	-	-	-	-	-	-	-	-	1330	-	-	-	-	-
Strontium	4-II	-	-	-	-	-	-	-	-	-	1334	-	-	-	-	-
Ferramic E	4-II	-	-	-	-	-	-	1093	-	-	-	-	-	-	-	-
Ferroferric oxide + Iron(ic) oxide	4-I	-	-	-	-	-	-	-	-	-	-	-	715	-	-	-
Fiber cermets	6-II	928	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fiber glass fabrics	6-II	-	-	-	-	-	-	-	-	1269	-	-	-	-	-	-
Fiberfrax paper - tantalum shield - graphite fibers composite system	6-II	-	-	-	-	-	-	-	1285	-	-	-	-	-	-	-
Fiberite 4030-190	6-II	-	-	-	-	-	1103	-	-	-	-	-	-	-	-	-
Firebricks																
Alumina	4-I	-	-	-	-	-	613	-	621	-	-	-	-	-	-	-
ASTM group no. 16 insulating	5	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
ASTM group no. 20 insulating	5	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
ASTM group no. 23 insulating	5	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
ASTM group no. 26 insulating	5	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
ASTM group no. 28 insulating	5	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
ASTM group no. 30 insulating	5	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
Egyptian	4-I	-	-	-	-	-	-	-	798	800	-	-	-	-	-	-
Firebricks	4-I	-	-	-	-	-	-	-	798	789, 800	-	-	-	-	-	-
K-28 insulating	5	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
Siliceous	5	-	-	-	-	-	-	-	-	-	-	-	1043	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Flint container glass.	4-II	-	-	-	-	-	-	-	-	-	-	-	1799	1801	1729	-
Flint glass	4-II	-	-	-	-	-	-	1829	-	-	-	-	-	-	-	-
Fluorothene	6-II	1030	-	-	-	-	-	-	-		1045	-	-	-	-	-
FM-5064 graphite-phenolic laminates	6-II	-	-	-	-	-	-	1140	-	-	-	-	-	-	-	-
Forsterite	4-II	1285	1285	-	-	-	1287	-	1291	-	-	-	-	-	-	-
Forsterite 243	4-II	1285	1285	-	-	-	-	-	-	-	-	-	-	-	-	-
Forsterite-stainless steel laminates	6-II	-	-	-	-	-	-	-	1221	-	-	-	-	-	-	-
Fortical 28227	6-II	-	-	-	-	-	-	-	-	-	944	-	-	-	-	-
Fortical 28238	6-II	-	-	-	-	-	-	-	-	-	944	-	-	-	-	-
Fresco FR0020	6-II	-	-	-	-	-	-	1214	-	-	-	-	-	-	-	-
FRLG 2502-1	6-II	-	-	-	-	-	-	-	-	1277	-	-	-	-	-	-
Furfural formaldehyde, wood flour filled	6-II	-	-	-	-	-	-	-	-	-	1000	-	-	-	-	-
G																
Gadolinia	4-I	174	174	-	-	-	-	176	178	-	180	-	182	-	-	-
Gadolinum (Gd)	1	509	509	509	509	509	511	-	-	-	513	-	-	-	-	-
Gadolinium + Tantalum	2-I	-	-	-	-	-	-	-	-	-	190	-	-	-	-	-
Gadolinium borides																
GdB_4	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GdB_6	6-I	295	296	-	-	-	300	-	-	-	-	-	-	-	-	-
Gadolinium carbides																
GdC_2	5	294	294	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium-cobalt intermetallics																
GdCo	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdCo_2$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdCo_3$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdCo_4$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdCo_5$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_2Co_3	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_3Co	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium-copper intermetallics																
GdCu	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdCu_4$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdCu_5$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium ferrides																
$GdFe_2$	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdFe_4$	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GeFe_5$	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_2Fe_3	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Gadolinium ferrides (cont.)																
Gd_2Fe_7	6-II	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium (tri-)fluoride (GdF_3)	5	-	407	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium-gallium intermetallics ($GdGa_2$)	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium hydrides																
GdH_2	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GdH_3	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium-nickel intermetallics																
GdNi	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdNi_2$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdNi_3$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdNi_4$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$GdNi_5$	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_2Ni_7	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_2Ni_{17}	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_3Ni	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_3Ni_2	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium-osmium intermetallics (Gd_2Os_3)	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium oxide (Gd_2O_3) . . .	4-I	174	174	-	-	-	-	176	178	-	180	-	182	-	-	-
Gadolinium selenides																
GdSe	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_2Se_3	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_3Se_4	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium silicides ($GdSi_2$) . .	6-I	523	-	-	-	-	527	-	-	-	-	-	-	-	-	-
Gadolinium-silver intermetallics (GdAg)	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium sulfides																
GdS_2	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gd_2S_3	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
Gadolinium tellurides																
Gd_2Te	6-I	-	-	-	-	-	638	-	-	-	-	-	-	-	-	-
Gd_2Te_3	6-I	-	-	-	-	-	638	-	-	-	-	-	-	-	-	-
Gadolinium-yttrium-cobalt intermetallics ($Gd_{1-x}Y_xCo_5$) .	6-I	665	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Galena	5	-	-	-	-	-	-	-	-	-	-	-	-	688	-	-
Gallium antimonide (GaSb) . . .	6-I	-	-	-	-	-	51	53	-	-	-	-	-	-	-	-
Gallium arsenide (GaAs) . . .	6-I	-	-	-	-	-	-	83	-	85	-	-	-	-	-	-
Gallium (sesqui-) oxide (Ga_2O_3) .	4-I	-	-	-	-	-	-	184	-	-	-	-	-	-	-	-
Gallium phosphide (GaP)	5	-	-	-	-	-	-	629	-	-	-	-	-	-	-	-
Gallium telluride (Ga_2Te_3) . . .	6-I	-	-	-	-	-	-	574	-	-	-	-	-	-	-	-
Gehlenite	4-II	-	-	-	-	-	-	1233	-	-	1235	-	-	-	-	-

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German Flake	1	-	-	-	-	-	50	-	-	-	-	-	-	-	-	-
. . . . . .	2-II	841	-	-	-	-	-	-	845	-	-	-	-	-	-	-
Germanium (Ge)	1	515	515	515	515	515	517	519	521	524	526	-	528-530	-	-	532
Germanium + Silicon	2-I	192	-	-	-	-	194	-	-	-	-	-	-	-	-	-
Germanium bismuth telluride ($Ge_{1-x}Bi_xTe$)	6-I	-	-	-	-	-	582	-	584	-	-	-	-	-	-	-
Germanium (di-)oxide (GeO_2) .	4-I	-	-	-	-	-	-	186	-	-	188	-	-	-	-	190
Germanium oxide glass	4-II	1637	-	-	-	-	-	1639	-	-	-	-	-	-	-	-
Germanium silicide (GeSi) . . .	6-I	-	-	-	-	-	-	405	-	-	-	-	-	-	-	-
Germanium telluride (GeTe) . .	6-I	-	-	-	-	-	576	-	578	-	-	-	-	-	-	580
Germanium telluride + Silver antimony telluride	6-I	-	-	-	-	-	715	-	-	-	-	-	-	-	-	-
Glasses (see individual glasses)																
Glass ceramics (see also pyroceram)	4-II	-	-	-	-	-	-	1587	1589	1591	-	-	1593-1599	1601	1603	-
Glucina	4-I	-	-	-	-	-	57	-	-	-	-	-	-	-	-	-
GMGA 5003 silicone	6-II	-	-	-	-	-	1070	-	-	-	-	-	-	-	-	-
Gold (Au)	1	534	534	-	-	534	536	538	540	-	542	544-546	548	550-552	-	554
Gold coating on titanium	6-II	-	-	-	-	-	-	-	-	-	-	-	1303	1305	-	-
Gold coating on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1307	-	-
Gold + Cadmium	2-I	196	196	196	-	-	198	-	-	-	-	-	-	-	-	200
Gold + Cobalt	2-I	-	-	-	-	-	202	-	-	-	-	-	-	-	-	-
Gold + Cobalt + ΣX_i	2-II	-	1012	-	-	-	1014	-	-	-	-	-	-	-	-	-
Gold + Copper	2-I	-	-	-	-	-	-	204	-	-	206	-	-	-	-	-
Gold + Copper + ΣX_i	2-II	-	-	-	-	-	1016	-	-	-	-	-	-	-	-	-
Gold + Iron	2-I	208	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gold + Manganese	2-I	210	-	-	-	-	212	-	-	-	-	-	-	-	-	-
Gold + Nickel	2-I	214	-	-	-	-	-	216	-	-	-	-	-	-	-	-
Gold + Palladium	2-I	-	-	-	-	-	218	-	-	-	220	-	-	-	-	-
Gold + Palladium + ΣX_i	2-II	-	1018	-	-	-	1020	-	-	-	-	-	-	-	-	-
Gold + Platinum	2-I	-	-	-	-	-	222	-	-	-	-	-	-	-	-	-
Gold + Silver	2-I	-	-	-	-	-	-	-	-	-	224	-	226	-	-	228
Gold + Uranium	2-I	230	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gold + Zinc	2-I	-	232	232	-	-	-	-	-	-	-	-	-	234	-	-
Gold alloy (special designations)																
Palau	2-I	-	-	-	-	-	-	-	-	-	220	-	-	-	-	-
Gold-manganese intermetallics (Au_2Mn)	6-I	-	-	-	-	-	648	-	-	-	-	-	-	-	-	-
Gold-titanium intermetallics (Au_2Ti)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Gold-zirconium intermetallics (Au_3Zr)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-

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Goodyear foam-inplace.	6-11	962	-	-	-	-	-	-	-	-	966	-	-	-	-	-
Graphites (Special designations)																
Grade 580	1	-	-	-	-	-	-	-	-	-	-	-	110-112	-	-	-
Grade 896G	1	-	-	-	-	-	371	-	-	-	114	-	-	-	-	-
Grade 942S	1	-	-	-	-	-	371	-	-	-	116	-	-	-	-	-
Grade 3474D	1	-	-	-	-	-	371	118	120	-	122	124	126-128	130	-	-
Grade 3499	1	-	-	-	-	-	371	-	-	-	132	-	-	-	-	-
Grade 7087	1	105	-	-	-	-	-	134	136	138	140	142	144-146	148	-	-
Grade 7100	1	-	-	-	-	-	-	-	-	-	-	-	150-152	-	-	-
Grade AGHT	1	-	-	-	-	-	-	-	154	-	-	-	-	-	-	-
Grade AGKSP	1	-	-	-	-	-	-	-	-	-	-	-	156	158	-	-
Grade AGKT	1	-	-	-	-	-	371	-	-	-	-	-	-	-	-	-
Grade AGOT	1	-	-	-	-	-	160	-	162	-	165	-	-	-	-	-
Grade AGOT-CSF.	1	-	-	-	-	-	160	-	-	-	-	-	-	-	-	-
Grade AGOT-KC	1	-	-	-	-	-	160	-	-	-	-	-	-	-	-	-
Grade AGR	1	-	-	-	-	-	371	-	-	-	167	-	-	-	-	-
Grade AGX	1	-	-	-	-	-	-	-	-	-	169	-	171	-	-	-
Grade ATJ	1	103	-	-	-	-	371	175	177	-	179	-	182-188	190	-	-
Grade ATL-82	1	-	-	-	-	-	-	-	192	-	194	-	-	-	-	-
Grade AUC	1	-	-	-	-	-	-	-	-	-	-	-	196-198	200	-	-
Grade AWG	1	-	-	-	-	-	202	-	204	-	-	-	-	-	-	-
Grade CEP	1	-	-	-	-	-	-	-	-	-	206	-	-	-	-	-
Grade CFW	1	-	-	-	-	-	208	-	-	-	210	-	-	-	-	-
Grade CFZ	1	-	-	-	-	-	-	-	-	-	212	-	-	-	-	-
Grade CS	1	-	-	-	-	-	371	214	216	218	-	-	-	-	-	-
Grade CSF	1	-	-	-	-	-	-	-	220	-	222	-	-	-	-	-
Grade EH	1	-	-	-	-	-	371	-	-	-	224	-	-	-	-	-
Grade GBE	1	-	-	-	-	-	-	-	226	-	228	230	232-234	236	-	-
Grade GBH	1	105	-	-	-	-	-	238	240	-	242	244	246-248	250	-	-
Grade H1LM	1	-	-	-	-	-	-	-	-	-	-	-	252-254	-	-	-
Grade H3LM	1	-	-	-	-	-	371	-	-	-	256	-	258-260	-	-	-
Grade H4LM	1	-	-	-	-	-	-	-	262	-	264	-	-	-	-	-
Grade MH4LM	1	-	-	-	-	-	-	-	266	-	-	-	-	-	-	-
Grade NT-0005	1	-	-	-	-	-	371	-	-	-	349	-	-	-	-	-
Grade R-0008	1	-	-	-	-	-	268	-	270	-	-	-	-	-	-	-
Grade R-0025	1	-	-	-	-	-	-	-	272	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Graphites (special design.) (cont)																
Grade RT-0003	1	-	-	-	-	-	-	-	274	-	-	-	-	-	-	-
Grade RVA	1	-	-	-	-	-	-	-	-	-	276	-	-	-	-	-
Grade RVC	1	-	-	-	-	-	-	-	-	-	278	-	-	-	-	-
Grade RVD	1	-	-	-	-	-	-	-	-	-	280	-	-	-	-	-
Grade SA-25	1	-	-	-	-	-	-	-	282	-	-	-	-	-	-	-
Grade SPK	1	-	-	-	-	-	-	-	-	-	-	-	284	286	-	-
Grade TS	1	-	-	-	-	-	-	-	-	-	288	-	-	-	-	-
Nuclear grade TSP	1	-	-	-	-	-	-	-	290	-	-	-	-	-	-	-
Grade TSX	1	-	-	-	-	-	-	-	-	-	292	-	-	-	-	-
Grade W	1	-	-	-	-	-	-	-	294	-	296	-	-	-	-	-
Grade WSF	1	-	-	-	-	-	-	-	-	-	298	-	-	-	-	-
Grade ZT	1	-	-	-	-	-	300	-	302	-	-	-	-	-	-	-
Grade ZT-5001	1	-	-	-	-	-	-	-	302	-	-	-	-	-	-	-
Grade ZTA	1	-	-	-	-	-	-	-	-	-	305	-	-	-	-	-
Grade ZTB	1	-	-	-	-	-	-	-	-	-	307	-	-	-	-	-
Grade ZTC	1	-	-	-	-	-	-	-	-	-	309	-	-	-	-	-
Grade ZTD	1	-	-	-	-	-	-	-	-	-	311	-	-	-	-	-
Grade ZTE	1	-	-	-	-	-	-	-	-	-	313	-	-	-	-	-
Grade ZTF	1	-	-	-	-	-	-	-	-	-	315	-	-	-	-	-
Graphites, others																
Artificial grades	1	-	-	-	-	-	-	-	360	-	363	-	-	-	-	-
Carbon impregnated	1	-	-	-	-	-	-	-	358	-	-	-	-	-	-	-
Ceylon graphite	1	-	-	-	-	-	352	-	354	-	356	-	-	-	-	-
Coated with grade W graphite	1	-	-	-	-	-	-	-	294	-	296	-	-	-	-	-
Coated with silicon carbide	1	-	-	-	-	-	-	-	-	-	-	-	386	-	-	-
Cumberland graphite	1	-	-	-	-	-	352	-	354	-	-	-	-	-	-	-
Electrode	1	-	-	-	-	-	-	-	360	-	-	-	365	-	-	-
Experimental grades	1	-	-	-	-	-	337	-	339	343	349	-	-	-	-	-
Flake	1	-	-	-	-	-	-	-	-	-	369	-	-	-	-	-
Great Lakes base stock grades	1	-	-	-	-	-	-	-	-	-	381	-	-	-	-	-
Great Lakes end-cap grades	1	-	-	-	-	-	-	-	-	-	381	-	-	-	-	-
Great Lakes impervious grades	1	-	-	-	-	-	-	-	-	-	381	-	-	-	-	-
Hilger H. S. grade	1	-	-	-	-	-	352	-	354	-	-	-	-	-	-	-
Karbate	1	-	-	-	-	-	-	-	358	-	-	-	-	-	-	-
Lampblack-base	1	-	-	-	-	-	-	-	367	-	-	-	-	-	-	-
Natural graphite-base	1	-	-	-	-	-	352	-	354	-	-	-	-	-	-	-
Pyrolytic	1	-	-	-	-	-	-	-	317	-	319	-	325-331	333-335	-	-
Pyrolytic coating on tantalum	6-II	-	-	-	-	-	-	-	-	-	-	-	573-575	-	-	-
Pyrolytic, nucleated and regenerative	1	-	-	-	-	-	-	-	-	-	319	-	-	-	-	-
Silicon carbide bonded	1	-	-	-	-	-	-	-	-	-	-	-	386	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Graphites, others (cont.)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unspecified grades	1	105	105	-	-	105	371	375	377	379	383	-	386-388	-	-	390
Graphite + Silicon carbide	5	-	-	-	-	-	-	737	-	-	-	-	-	-	-	-
Graphite + Thorium (di-)oxide	5	-	-	-	-	-	-	-	739	-	-	-	-	-	-	-
Graphite + Uranium (di-)carbide	5	-	-	-	-	-	-	-	743	-	-	-	-	-	-	-
Graphite + Uranium (di-)oxide	5	-	-	-	-	-	-	-	741	-	-	-	-	-	-	-
Graphite + Zirconium (pyro-)-carbide	5	-	-	-	-	-	-	-	-	-	745	-	-	-	-	-
Graphite fabric	6-II	-	-	-	-	-	-	-	-	1271	-	-	-	-	-	-
Graphite cloth laminates																
PT-0110	6-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
PT-0111	6-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
PT-0113	6-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
PT-0114	6-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
PT-0154	6-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
PT-0156	6-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
Graphite fibers - tantalum shield composite system	6-II	-	-	-	-	-	-	-	1281	-	-	-	-	-	-	-
Graphite-phenolic laminate FM-5064	6-II	-	-	-	-	-	-	1140	-	-	-	-	-	-	-	-
Gray cast iron	3	-	-	-	-	-	-	-	29-33	-	39	-	-	-	-	-
Gray cast iron, ferritic base	3	-	-	-	-	-	-	-	33	-	-	-	-	-	-	-
Gray cast iron, pearlitic base	3	-	-	-	-	-	-	-	31	-	-	-	-	-	-	-
H																
Hafnia	4-I	192	192	-	-	-	194	196	198	-	200	-	202	-	-	204
Hafnium (Hf)	1	556	556	-	-	-	558	560	-	-	562	-	-	-	-	-
Hafnium + Zirconium	2-I	236	236	-	-	-	238	240	242	-	244	-	-	-	-	246
Hafnium antimonide (HfSb)	6-I	-	-	-	-	-	55	-	-	-	-	-	-	-	-	-
Hafnium beryllide (Hf_2Be_{21})	6-I	-	-	-	-	-	-	98	-	-	100	-	-	-	-	-
Hafnium (di-)boride (HfB_2)	6-I	170	170	-	-	-	172	174	176	-	178	-	180	-	-	-
Hafnium carbide (HfC)	5	49	49	-	-	-	51	53	55	57	59	-	61	-	-	-
Hafnium carbide + Zirconium cermet	6-II	-	-	-	-	-	-	-	-	-	952	-	-	-	-	-
Hafnium-chromium intermetallics ($HfCr_2$)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnium-cobalt intermetallics ($HfCo_2$)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnium ferrides ($HfFe_2$)	6-I	-	306	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnium fluoride (HfF_4)	5	-	-	-	-	-	-	367	-	-	-	-	-	-	-	-
Hafnium germanide (HfGe)	6-I	-	-	-	-	-	325	-	-	-	-	-	-	-	-	-
Hafnium-manganese intermetallics ($HfMn_2$)	6-I	-	683	-	-	-	-	-	-	-	-	-	-	-	-	-

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Hafnium-molybdenum intermetallics ($HfMo_2$)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnium-nickel intermetallics ($HfNi_2$)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnium nitride (HfN)	5	517	517	-	-	-	519	521	523	-	525	-	527-529	-	-	531
Hafnium (di-)oxide (HfO_2)	4-I	192	192	-	-	-	194	196	198	-	200	-	202	-	-	204
Hafnium (di-)oxide coating on tungsten	6-II	-	-	-	-	-	-	-	-	-	-	-	1377-1379	-	-	-
Hafnium (di-)oxide + ΣX_i	4-I	-	-	-	-	-	-	-	-	-	711	-	-	-	-	-
Hafnium (di-)oxide + Calcium oxide	4-I	-	-	-	-	-	-	-	-	-	701	-	-	-	-	-
Hafnium (di-)oxide + Magnesium oxide	4-I	-	-	-	-	-	-	-	-	-	703	-	-	-	-	-
Hafnium (di-)oxide + Tantalum (pent-)oxide	4-I	-	-	-	-	-	-	-	-	-	705	-	-	-	-	-
Hafnium (di-)oxide + Titanium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	707	-	-	-	-	-
Hafnium (di-)oxide + Titanium (di-)oxide + Zirconium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	709	-	-	-	-	-
Hafnium selenide (HfSe)	6-I	-	-	-	-	-	331	-	-	-	-	-	-	-	-	-
Hafnium silicate ($HfO_2 \cdot SiO_2$)	4-II	-	-	-	-	-	-	-	-	-	1241	-	-	-	-	-
Hafnium silicides																
HfSi	6-I	-	524	-	-	-	-	-	-	-	-	-	-	-	-	-
$HfSi_2$	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnium tellurides (HfTe)	6-I	-	-	-	-	-	638	-	-	-	-	-	-	-	-	-
Hafnium-vanadium intermetallics (HfV_2)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Hafnon	4-II	-	-	-	-	-	-	-	-	-	1241	-	-	-	-	-
Hamilton standard foam-inplace.	6-II	962	-	-	-	-	-	-	-	-	966	-	-	-	-	-
Hastelloy 25	2-II	-	-	-	-	-	-	-	-	-	898	-	-	-	-	-
Hastelloy 500	2-II	-	-	-	-	-	-	-	-	-	1154	-	-	-	-	-
Hastelloy A	2-II	-	-	-	-	-	-	-	1261	-	-	-	-	-	-	-
Hastelloy B	2-II	1277	1275	-	-	-	-	1279	1281	-	1287	1289	1293-1295	1297	-	-
Hastelloy C	2-II	1119	-	-	-	-	-	1130	1136	-	1166	-	-	-	-	-
Hastelloy C (AMS-5530)	2-II	1277	-	-	-	-	-	-	1281	-	1283	1289	1291-1295	1297	-	-
Hastelloy C (AMS-5530C)	2-II	-	-	-	-	-	-	-	-	-	-	1289	1293	1297	-	-
Hastelloy C coating on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1337	-	-	-
Hastelloy D	2-II	-	-	-	-	-	-	-	-	-	1301	-	-	-	-	-
Hastelloy F	2-II	-	-	-	-	-	-	-	-	-	1164	-	-	-	-	-
Hastelloy N	2-II	1277	-	-	-	-	-	-	1281	-	1283	-	-	-	-	-
Hastelloy R-235	2-II	1122	-	-	-	-	-	1128	1130-1138	-	1161	-	-	-	-	-

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Hastelloy X	2-II	1119, 1257	-		-	-	-	-	1134, 1261	-	1164	-	1172, 1189	1203	-	-
Hastelloy X coating on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1339	-	-	-
Hematite	4-I	-	-	-	-	-	214	218	-	-	222	-	-	224	-	-
Hidurel 6	2-II	-	-	-	-	-	962	-	964	-	-	-	-	-	-	-
Holmia	4-I	-	-	-	-	-	-	206	-	-	208	-	-	-	-	-
Holmium (Ho)	1	564	564	564	564	564	566	-	-	-	-	-	-	-	-	-
Holmium borides																
[illegible]	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[illegible]	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Holmium carbides																
HoC_2	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ho_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Holmium-cobalt intermetallics																
$HoCo_2$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$HoCo_5$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Holmium ferrides																
$HoFe_2$	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$HoFe_5$	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Holmium-gallium intermetallics ($HoGa_2$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Holmium-manganese intermetallics																
$HoMn_2$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$HoMn_5$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Holmium-nickel intermetallics																
$HoNi_2$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$HoNi_5$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Holmium oxide (Ho_2O_3)	4-I	-	-	-	-	-	-	206	-	-	208	-	-	-	-	-
Honeycombs																
17-7PH stainless steel skin and core	6-II	-	-	-	-	-	-	1236	1230	-	1234	-	-	-	-	-
2024 T-3 aluminum alloy skin and core	6-II	-	-	-	-	-	-	1236	1230	-	1232	-	-	-	-	-
2024 T-3 aluminum alloy skin and alkyd isocyanate foam core	6-II	-	-	-	-	-	-	1236	1239	-	1243	-	-	-	-	-
2024 T-3 aluminum alloy skin and phenolic core	6-II	-	-	-	-	-	-	1236	1239	-	1241	-	-	-	-	-
Metal skin and metal core	6-II	-	-	-	-	-	-	1236	1230	-	1232-1234	-	-	-	-	-
Plastic and metal composites	6-II	-	-	-	-	-	-	1236	1239	-	1241-1246	-	-	-	-	-
Plastic skin and plastic core	6-II	-	-	-	-	-	-	-	1247-1253	-	-	-	-	-	-	-

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Honeycombs (cont.)																
Polyester P-43 resin skin and 2024 T-3 aluminum alloy core	6-II	-	-	-	-	-	-	1236	1239	-	1245	-	-	-	-	-
Polyester resin no. P-43 skin and polyester honeycomb core	6-II	-	-	-	-	-	-	1236	-	-	-	-	-	-	-	-
Polyester resin skin and epoxy resin core	6-II	-	-	-	-	-	-	-	1247	-		-	-	-	-	-
Polyester resin skin and phenolic resin core	6-II	-	-		-	-	-	-	1247	-	-	-	-	-	-	-
Polyester Vibrin 135 and 181 fabric faces and phenolic core	6-II	-	-	-	-	-	-	1236		-	-	-	-	-	-	-
TAC polyester Vibrin 135 and 181 fabric skin and alkyd isocyanate foam core	6-II	-	-	-	-	-	-	-	-	-	1249	-	-	-	-	-
Reinforced polyester skin and polyester core	6-II	-	-	-	-	-	-	-	-	-	1253	-	-	-	-	-
Hysol 6000-CP epoxide	6-II	1006	-	-	-	-	-	-	1010	1012	1012	-	-	-	-	-
I																
Igelit-PCU	6-II	-	-	-	-	-	-	1078	1086	1082	-	-	-	-	-	-
Ilmenite	4-II	-	-	-	-	-	1427	1429	-	-	1431	-	-	-	-	-
Incoloy	3	-	-	-	-	-	-	383	-	-	-	-	-	-	-	-
Incoloy 713C	2-II	-	-	-	-	-	-	1126	1140	-	1152	-	-	-	-	-
Incoloy 800	3	-	-	-	-	-	-	-	-	-	405	-	-	-	-	-
Incoloy 801	3	-	-	-	-	-	-	-	-	-	405	-	-	-	-	-
Incoloy 804	2-II	-	-	-	-	-	-	-	-	-	1164	-	-	-	-	-
Incoloy 825	2-II	-	-	-	-	-	-	-	-	-	1267	-	-	-	-	-
Incoloy 901	2-II	-	-	-	-	-	-	1259	1261	-	-	-	-	-	-	-
Incoloy T	3	-	-	-	-	-	-	-	-	-	405	-	-	-	-	-
Inconel	2-II	1119	1119	-	-	-	1124	1128	1140, 1144, 1145	1148	1158, 1161	-	1172, 1177, 1191	-	-	-
Inconel coated with enamel . . .	6-II	-	-	-	-	-	1151	-	-	-	-	-	-	-	-	-
Inconel coated with NBS coating A-418	6-II	-	-	-	-	-	-	-	-	-	-	-	1361-1363	-	-	-
Inconel coated with NBS coating N-143	6-II	-	-	-	-	-	-	-	-	-	-	-	1353-1355	-	-	-
Inconel coated with nickel aluminides	6-II	-	-	-	-	-	-	-	-	-	-	-	1453-1455	1457	-	-
Inconel coated with silicone . .	6-II	-	-	-	-	-	1495	-	-	-	-	-	-	-	-	-
Inconel coated with zirconium (di-)oxide	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1397	-	-

Material Name	Volume	Density	Melting Point	Heat [illegible]	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Inconel 600	2-II	1219, 1307	-	-	-	-	-	-	1223, 1313	-	1158	-	-	-	-	-
Inconel 604	2-II	-	-	-	-	-	-	-	-	-	1158	-	-	-	-	-
Inconel 625	2-II	-	-	-	-	-	-	-	-	-	1166	-	-	-	-	-
Inconel 700	2-II	-	-	-	-	-	-	-	1223	-	1227	-	-	-	-	-
Inconel 702	2-II	-	1119	-	-	-	-	1128	1144	-	1152	-	1193	1205	-	-
Inconel 718	2-II	-	-	-	-	-	-	-	-	-	1164	-	-	-	-	-
Inconel 721	2-II	-	-	-	-	-	-	-	-	-	1158	-	-	-	-	-
Inconel 722	2-II	-	-	-	-	-	-	-	-	-	1158	-	-	-	-	-
Inconel B	2-II	-	-	-	-	-	-	-	-	-	-	-	1174	-	-	-
Inconel M	2-II	-	-	-	-	-	-	-	-	-	1158	-	-	-	-	-
Inconel W	2-II	-	-	-	-	-	-	-	-	-	1158	-	-	-	-	-
Inconel X	2-II	1119	1119	-	-	-	1124	1128	1140	1148	1158	-	1172, 1177, 1186, 1195	1207	-	-
Inconel X coated with boron carbide	6-II	-	-	-	-	-	-	-	-	-	-	-	1403	1405	-	-
Inconel X coated with nickel-chromium alloy	6-II	-	-	-	-	-	-	-	-	-	-	-	1333	1335	-	-
Inconel X coated with tantalum carbide	6-II	-	-	-	-	-	-	-	-	-	-	-	1417	1419	-	-
Inconel X coated with tungsten .	6-II	-	-	-	-	-	-	-	-	-	-	-	1329	1331	-	-
Inconel X coated with tungsten-cobalt alloy	6-II	-	-	-	-	-	-	-	-	-	-	-	1341	1343	-	-
Inconel X coated with zirconium (di-)oxide	6-II	-	-	-	-	-	-	-	-	-	-	-	1399	1401	-	-
Inconel X 750	2-II	1122	-	-	-	-	-	-	1140	-	1158	-	-	-	-	-
Index rod (gas baked coke) . . .	1	-	-	-	-	-	85	-	87	-	-	-	-	-	-	-
Indium antimonide (InSb). . . .	6-I	-	-	-	-	-	57	59	61	63	65	-	-	-	-	-
Indium arsenide (InAs)	6-I	-	-	-	-	-	87	89	91	-	-	-	-	-	-	-
Indium bismuth selenide ($InBiSe_3$)	6-I	-	-	-	-	-	333	-	-	-	-	-	-	-	-	-
Indium (sesqui-)oxide (In_2O_3). .	4-I	-	-	-	-	-	-	-	-	-	210	-	-	-	-	-
Indium phosphide (InP)	5	-	-	-	-	-	631	633	-	-	-	-	-	-	-	-
Indium telluride (In_2Te_3)	6-I	-	-	-	-	-	586	-	588	-	-	-	-	-	-	-
Inquartation silver	1	-	-	-	-	-	-	904	-	-	-	-	-	-	-	-
Insulating bricks (see bricks)																
Insulating firebricks (see firebricks)																
Insurok C-T-601	6-II	1128	-	-	-	-	-	1142	-	-	-	-	-	-	-	-
Insurok XXX-T-640	6-II	1128	-	-	-	-	-	1142	-	-	-	-	-	-	-	-
Intermetallics (see each individual intermetallics)																
Inverse spinel	4-I	-	-	-	-	-	-	691-693	-	-	-	-	-	-	-	-
Iodide titanium	1	-	993	-	-	-	996	999	1001	-	1005	-	-	-	-	1017

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Iodide zirconium	1	-	1099	-	-	-	1102	1104	1106	-	1111	-	-	-	-	-
Iridium (Ir)	1	568	568	-	-	568	570	572	574	-	-	-	576	-	-	-
Iridium + Rhodium	2-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	248
Iridium (tri-) silicide ($IrSi_3$)	6-I	-	-	-	-	-	407	-	-	-	-	-	-	-	-	-
Iron (Fe)	1	578	578	578	-	578	581	583	585	587	589	592	594-600	602	-	604
Iron, Armco	1	578	-	-	-	-	581	583	585	587	589	592	594, 598	602	-	-
Iron, electrolytic	1	-	578	-	-	578	581	583	-	-	589	-	-	-	-	604
Iron, Svea	1	-	-	-	-	-	-	-	585	-	-	-	-	-	-	-
Iron coated with chromium carbide - cobalt blend	6-II	-	-	-	-	-	-	-	-	-	-	1407	1409	-	-	-
Iron coated with molybdenum	6-II	-	-	-	-	-	-	-	-	-	-	1309	1311	-	-	-
Iron coated with tungsten	6-II	-	-	-	-	-	-	-	-	-	-	1325	1327	-	-	-
Iron coated with tungsten carbide	6-II	-	-	-	-	-	-	-	-	-	-	1421	1423	-	-	-
Iron + ΣX_i	3	461	-	-	-	-	463	-	465	-	-	-	-	-	-	-
Iron + Aluminum + ΣX_i	3	45	-	-	-	-	47-51	-	-	-	-	-	-	-	-	-
Iron + Carbon + ΣX_i ($C \leq 2.00$)	3	-	-	-	-	3	5	7-10	-	12-14	16-20	-	-	-	-	22
Iron + Carbon + ΣX_i ($C > 2.00$)	3	27	-	-	-	-	-	-	29-37	-	39-41	-	-	-	-	-
Iron + Chromium + ΣX_i	3	55	53	-	-	-	57-63	65-77	79-83	85-94	96-118	120	122-134	136-[illegible]	-	-
Iron + Chromium + Nickel + + ΣX_i	3	140, 145	140-141	-	-	-	147-153	155-164	166-180	182-193	195-227	229-231	233-272	274-286	-	-
Iron + Cobalt + ΣX_i	3	-	-	-	-	-	288-290	292-294	296	298	300	-	-	302	-	-
Iron + Copper + ΣX_i	3	-	-	-	-	-	304	306	308	-	-	-	-	-	-	-
Iron + Manganese + ΣX_i	3	310	-	-	-	-	312-314	316-323	325-327	329-333	335-343	-	345-347	349	-	-
Iron + Molybdenum + ΣX_i	3	-	-	-	-	-	-	-	351	-	353	-	-	-	-	-
Iron + Nickel + ΣX_i	3	-	-	-	-	-	355	357-359	361-363	365	367-377	-	-	-	-	-
Iron + Nickel + Chromium + + ΣX_i	3	379	-	-	-	-	381	383	385-393	395-397	399-407	-	409-411	413	-	-
Iron + Platinum + ΣX_i	3	-	-	-	-	-	-	-	-	-	415	-	-	-	-	-
Iron + Silicon + ΣX_i	3	-	-	-	-	-	417-419	421-425	427-437	-	439-442	-	-	-	-	-
Iron + Tellurium + ΣX_i	3	-	-	-	-	-	-	446	-	-	-	-	-	-	-	-
Iron + Titanium + ΣX_i	3	-	-	-	-	-	-	448	-	-	-	-	-	-	-	-
Iron + Tungsten + ΣX_i	3	-	-	-	-	-	-	-	450	-	452	-	454	-	-	-
Iron + Vanadium + ΣX_i	3	-	-	-	-	-	456-458	-	-	-	-	-	-	-	-	-
Iron alloys (see cast irons and steels for special design.)																

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Iron aluminates																
$FeO \cdot Al_2O_3$	4-II	-	-	-	-	-	-	999	-	-	-	-	-	-	-	-
$Fe_2O_3 \cdot 2 Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	1001		-	-	-	-
Iron beryllide ($FeBe_2$)	6-I	-	158	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron borides																
FeB	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Fe_2B	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron carbide (Fe_3C)	5	63	63	-	-	-	-	65	-	-	-	-	-	-	-	-
Iron chromites																
$FeO \cdot Cr_2O_3$	4-II	-	-	-	-	-	-	1051	-	-	1053	-	-	-	-	-
$Fe_2O_3 \cdot 2 Cr_2O_3$	4-II	-	-	-	-	-	-	-	-	-	1053	-	-	-	-	-
Iron cobaltite ($FeO \cdot Co_2O_3$)	4-II	-	-	-	-	-	-	1065	-	-	-	-	-	-	-	-
Iron lead silicate glass	4-II	-	-	-	-	-	1737	-	-	-	-	-	-	-	-	-
Iron-niobium intermetallics (Fe_3Nb_2)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron nitride (Fe_4N)	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron oxides																
FeO	4-I	-	-	-	-	-	-	216	-	-	222	-	-	-	-	-
Fe_2O_3	4-I	-	-	-	-	-	214	218	-	-	222	-	-	224	-	-
Fe_3O_4	4-I	212	212	-	-	-	-	220	-	-	-	-	-	-	-	-
Iron(ic) oxide coating on Haynes alloy no. 25 (L-605)	6-II	-	-	-	-	-	-	-	-	-	-	-	1381-1383	-	-	-
Iron(ic) oxide + Aluminum oxide	4-I	-	-	-	-	-	-	-	-	-	713	-	-	-	-	-
Iron(ic) oxide + Magnesium oxide	4-I	-	-	-	-	-	-	-	-	-	717	-	-	-	-	-
Iron(ic) oxide + Silicon (di-)oxide	4-I	-	-	-	-	-	-	719	-	-	-	-	-	-	-	-
Iron(ous) oxide + ΣX_i	4-I	-	-	-	-	-	-	-	-	-	721	-	-	-	-	-
Iron(ous, ic) oxide + Iron(ic) oxide	4-I	-	-	-	-	-	-	-	-	-	-	-	715	-	-	-
Iron phosphites																
Fe_2P	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Fe_3P	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron selenides																
FeSe	6-I	-	-	-	-	-	-	335	-	-	-	-	-	-	-	-
$FeSe_2$	6-I	-	-	-	-	-	-	335	-	-	-	-	-	-	-	-
Fe_3Se_4	6-I	-	-	-	-	-	-	335	-	-	-	-	-	-	-	-
Fe_7Se_8	6-I	-	-	-	-	-	-	335	-	-	-	-	-	-	-	-
Iron (ortho-) silicate ($2 FeO \cdot SiO_2$)	4-II	-	-	-	-	-	-	1243	-	-	1245	-	-	-	-	-
Iron silicides																
FeSi	6-I	-	409	-	-	-	411	-	-	-	413	-	-	-	-	-
$FeSi_2$	6-I	-	409	-	-	-	-	-	-	-	413	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Iron silicides (cont.)																
Fe_3Si	6-I	-	409	-	-	-	-	-	-	-	413	-	-	-	-	-
Fe_5Si_3	6-I	-	409	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron sulfides																
FeS	5	-	-	-	-	-	-	680	-	-		-	-	-	-	-
FeS_2	5	-	-	-	-	-	-	680	-	-	-	-	-	682	-	-
Iron tellurides																
FeTe	6-I	-	-	-	-	-	-	590	-	-	-	-	-	-	-	-
$FeTe_2$	6-I	-	-	-	-	-	-	590	-	-	592	-	-	-	-	-
Iron titanate ($FeO \cdot TiO_3$). . . .	4-II	-	1425	1425	-	-	1427	1429	-	-	1431	-	-	-	-	-
Iron titanate coating on niobium-zirconium alloys	6-II	-	-	-	-	-	-	-	-	-	-	-	1385	-	-	-
Iron-zirconium intermetallics																
Fe_2Zr	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Fe_2Zr	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Isobutylene and isoprene copolymer	6-II	-	-	-	-	-	-	-	-	1062	-	-	-	-	-	-
Isocyanate polyester elastomer .	6-II	960	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isofoam	6-II	962	-	-	-	-	-	-	-	-	906	-	-	-	-	-
K																
Kel-F	6-II	1030	-	-	-	-	-	-	1037	-	1045	-	-	-	-	-
Kennametals																
3047	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
3109	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
3406	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
3411	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
K1	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
K2S	6-II	-	-	-	-	-	-	-	889	-	885	-	-	-	-	-
K3H	6-II	-	-	-	-	-	-	-	-	-	881	-	-	-	-	-
K4H	6-II	-	-	-	-	-	-	-	-	-	885	-	-	-	-	-
K5H	6-II	-	-	-	-	-	-	-	-	-	885	-	-	-	-	-
K6	6-II	-	-	-	-	-	-	-	889	-	934	-	-	-	-	-
K7H	6-II	-	-	-	-	-	-	-	-	-	885	-	-	-	-	-
K8	6-II	-	-	-	-	-	-	-	-	-	897	-	-	-	-	-
K9	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
K10	2-I	-	-	-	-	-	-	-	-	-	565	-	-	-	-	-
K11	6-II	-	-	-	-	-	-	-	-	-	897	-	-	-	-	-
K21	6-II	-	-	-	-	-	-	-	-	-	883	-	-	-	-	-
K45	6-II	-	-	-	-	-	-	-	-	-	885	-	-	-	-	-
K68	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
K81	6-II	-	-	-	-	-	-	-	-	-	881	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Kennametals (cont.)																
K82	6-II	-	-	-	-	-	-	-	-	-	881	-	-	-	-	-
K84	6-II	-	-	-	-	-	-	-	-	-	881	-	-	-	-	-
K86	6-II	-	-	-	-	-	-	-	-	-	881	-	-	-	-	-
K90	6-II	-	-	-	-	-	-	-	-	-	903	-	-	-	-	-
K91	6-II	-	-	-	-	-	-	-	-	-	903	-	-	-	-	-
K92	6-II	-	-	-	-	-	-	-	-	-	903	-	-	-	-	-
K94	6-II	-	-	-	-	-	-	-	-	-	901	-	-	-	-	-
K95	6-II	-	-	-	-	-	-	-	-	-	899	-	-	-	-	-
K96	6-II	-	-	-	-	-	-	-	-	-	899	-	-	-	-	-
K138	6-II	136	-	-	-	-	-	-	-	-	864	-	-	-	-	-
K138A	6-II	136	-	-	-	-	-	-	-	-	864	-	-	-	-	-
K150A	6-II	-	-	-	-	-	-	-	-	-	875	-	-	-	-	-
K151	6-II	-	-	-	-	-	-	-	-	-	875	-	-	-	-	-
K151A	6-II	-	-	-	-	-	-	-	-	-	875	-	-	-	-	-
K151B	6-II	-	-	-	-	-	-	-	-	-	877	-	-	-	-	-
K152B	6-II	142	-	-	-	-	-	-	-	-	877	-	-	-	-	-
K161B	6-II	-	-	-	-	-	-	871	873	-	875	-	-	-	-	-
K162B	6-II	-	-	-	-	-	-	-	-	-	877	-	-	-	-	-
K601	6-II	-	-	-	-	-	-	-	-	-	860	-	-	-	-	-
K701	6-II	-	-	-	-	-	-	-	-	-	895	-	-	-	-	-
K801	6-II	-	-	-	-	-	-	-	-	-	907	-	-	-	-	-
KM	6-II	-	-	-	-	-	-	-	-	-	883	-	-	-	-	-
Kennametal K-151A coating on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1491	-	-	-
Kennametal K-162B coating on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1493	-	-	-
Kennertium W-2	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
Kennertium W-10	6-II	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
Kimble N-51A glass	4-II	-	-	-	-	-	-	-	-	-	-	-	1707	1709	1713	-
Kyanite	4-II	-	-	-	-	-	-	1189	1191	-	1195	-		-	-	-
L																
Lamacoid 6045	6-II	..	-	-	-	-	-	-	-	1230	-	-	-	-	-	-
Lamicoid C-6030	6-II	1130	-	-	-	-	-	1144		-	-	-	-	-	-	-
Laminac 4129	6-II	-	-	-	-	-	-	-	-	-	968	-	-	-	-	-
Laminates																
Ceramic	6-II	-	-	-	-	-	-	-	-	-	1225	-	-	-	-	-
Forsterite-stainless steel . .	6-II	-	-	-	-	..	-	-	1233	-	-	-	-	-	-	-
Graphite cloth	6-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
Reinforced epoxide	6-II	-	-	-	-	-	-	1117	1120	1220	1122-1124	-	-	-	-	-

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Laminates (cont.)																
Reinforced epoxy resin	6-II	-	-	-	-	-	-	1115-1117	1120	1220	1122-1124	-	-	-	-	-
Reinforced epoxy and plyophen copolymer resin	6-II	-	-	-	-	-	-	-	-	1218	-	-	-	-	-	-
Reinforced copolymer of phenolic and epoxide resins	6-II	-	-	-	-	-	-	-	-	-	1126	-	-	-	-	-
Reinforced melamine-formaldehyde resin	6-II	-	-	-	-	-	-	-	-	1128	-	-	-	-	-	-
Reinforced phenolic resin	6-II	1130	-	-	-	-	-	1132-1146	1148-1156	1159-1170, 1220	1172-1179	-	-	-	-	-
Reinforced phenyl silane resin	6-II	-	-	-	-	-	-	1212	-	1220	-	-	-	-	-	-
Reinforced polyester resin	6-II	1180	-	-	-	-	-	1191	1195-1198	1220	1200	-	-	-	-	-
Reinforced TAC polyester resin	6-II	1180	-	-	-	-	-	1183	1185	1220	1187-1189	-	-	-	-	-
Reinforced polytetrafluoro-ethylene	6-II	-	-	-	-	-	-	1214	1218	1220	-	-	-	-	-	-
Reinforced silicone resin	6-II	1204	-	-	-	-	-	1206	1208, 1218	1220	1200	-	-	-	-	-
Reinforced teflon	6-II	-	-	-	-	-	-	1214	1218	1220	-	-	-	-	-	-
Lampblacks																
Lampblack	1	-	-	-	-	-	-	-	97	-	-	-	99-101	103	-	-
CEP National	1	-	-	-	-	-	-	-	-	-	-	-	-	103	-	-
L 113SP	1	-	-	-	-	-	-	-	-	-	-	-	101	103	-	-
RW Spektral II	1	-	-	-	-	-	-	-	-	-	-	-	-	103	-	-
Lanthana	4-I	226	226	-	-	-	-	228	-	-	230	-	-	-	-	232
Lanthanum (La)	1	606	606	606	606	606	608	610	-	-	612	-	-	-	-	614
Lanthanum + Calcium	2-I	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum + Magnesium	2-I	252	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum + Magnesium + ΣX_i	2-II	1022	1022	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum aluminides																
LaAl	6-I	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaAl_2$	6-I	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaAl_4$	6-I	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-
La_3Al_2	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum antimonide																
La_2Sb	6-I	-	81	-	-	-	-	-	-	-	-	-	-	-	-	-
La_3Sb_2	6-I	-	81	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum arsenide (LaAs)	6-I	94	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-bismuth intermetallics (LaBi)	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Lanthanum borides																
LaB_4	6-I	295	296	-	-	-	-	-	-	-	-	-	-	-	-	-
LaB_6	6-I	295	296	-	-	-	300	-	-	-	302	-	-	-	-	-
Lanthanum bromide ($LaBr_3$) . .	5	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-cadmium intermetallics																
LaCd	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaCd_2$	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaCd_{11}$	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum carbides																
LaC_2	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum chloride ($LaCl_3$) . .	5	339	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-copper intermetallics																
LaCu	6-I	667-668	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaCu_2$	6-I	667-668	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaCu_4$	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaCu_5$	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaCu_6$	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum fluoride (LaF_3) . . .	5	-	407	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-gallium intermetallics ($LaGa_2$)	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum germanides ($LaGe_2$) .	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-gold intermetallics																
LaAu	6-I	667-668	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaAu_2$	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaAu_3$	6-I	667	668	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2Au	6-I	667	668	-	-	-	-	-	-	-	-	-	-	-	-	-
La_3Au	6-I	668	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum hydride (LaH_2) . . .	5	427	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-indium intermetallics ($LaIn_3$)	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-lead intermetallics																
LaPb	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaPb_3$	6-I	667	668	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2Pb	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-magnesium intermetallics																
LaMg	6-I	667	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaMg_3$	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaMg_9$	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-
La_4Mg	6-I	-	668	-	-	-	-	-	-	-	-	-	-	-	-	-

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Lanthanum-mercury intermetallics																
LaHg	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaHg_3$	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaHg_9$	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-nickel intermetallics ($LaNi_5$)	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum nitride (LaN)	5	621	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-osmium intermetallics ($LaOs_2$)	6-I	367	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum oxides																
LaO	4-I	226	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2O_3	4-I	226	226	-	-	-	-	228	-	-	230	-	-	-	-	232
Lanthanum phosphide (LaP)	5	635	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum selenides																
LaSe	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2Se_3	6-I	365	-	-	-	-	367	-	-	-	-	-	-	-	-	-
La_3Se_4	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum silicides ($LaSi_2$)	6-I	415	415	-	-	-	527	-	-	-	417	-	-	-	-	-
Lanthanum-silver intermetallics																
LaAg	6-I	667-668	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaAg_2$	6-I	667-668	668	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaAg_3$	6-I	667-668	668	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum stannides																
$LaSn_3$	6-I	541	541	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2Sn	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2Sn_3	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum sulfides																
LaS	5	684	684	-	-	-	-	-	-	-	686	-	-	-	-	-
LaS_2	5	684	-	-	-	-	-	-	-	-	-	-	-	-	-	-
La_2S_3	5	684	684	-	-	-	-	-	-	-	686	-	-	-	-	-
La_3S_4	5	684	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum telluride (La_2Te_3)	6-I	-	-	-	-	-	638	-	-	-	-	-	-	-	-	-
Lanthanum-thallium intermetallics																
LaTl	6-I	-	669	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaTl_3$	6-I	667	669	-	-	-	-	-	-	-	-	-	-	-	-	-
La_3Tl	6-I	-	669	-	-	-	-	-	-	-	-	-	-	-	-	-
Lanthanum-zinc intermetallics																
LaZn	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$LaZn_9$	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Lanthanum-zinc intermetallics (cont.)																
$LaZn_{11}$	6-I	667	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lawsonite	4-II	-	-	-	-	-	-	1233	-	-	-	-	-	-	-	-
Lead + Copper	2-I	254	-	-	-	-	-	-	-	-	256	-	-	-	-	-
Lead aluminate ($PbO \cdot Al_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	1003	-	-	-	-	-
Lead borate glass	4-II	-	-	-	-	-	-	-	-	-	1615	-	-	-	-	-
Lead borosilicate glass	4-II	-	-	-	-	-	-	-	-	-	1717	-	-	-	-	-
Lead-barium magnesium aluminum silicate	4-II	-	-	-	-	-	-	-	-	-	1256-1258	-	-	-	-	-
Lead boron silicate ($5\ PbO \cdot B_2O_3 \cdot SiO_2$)	4-II	-	-	-	-	-	-	-	-	-	1250	-	-	-	-	-
Lead germanium oxide ($2\ PbO \cdot GeO_2$)	4-II	-	-	-	-	-	-	-	-	-	1133	-	-	-	-	-
Lead germanium phosphate ($5\ PbO \cdot GeO_2 \cdot P_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1175	-	-	-	-	-
Lead magnesium aluminum silicate	4-II	-	-	-	-	-	-	-	-	-	1252-1254	-	-	-	-	-
Lead molybdate ($PbO_2 \cdot MoO_3$)	4-II	-	-	-	-	-	-	1113	-	-	1115	-	-	-	-	-
Lead (mono-)oxide (PbO)	4-I	-	-	-	-	-	-	234	-	-	-	-	-	-	-	-
Lead phosphates																
$PbO \cdot P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1171	-	-	-	-	-
$2\ PbO \cdot P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1171	-	-	-	-	-
$3\ PbO \cdot P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1171	-	-	-	-	-
$3\ PbO \cdot 2\ P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1171	-	-	-	-	-
$5\ PbO \cdot 2\ P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1171	-	-	-	-	-
$8\ PbO \cdot P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1171	-	-	-	-	-
Lead potassium silicate glass	4-II	-	-	-	-	-	-	-	-	1749	-	-	-	-	-	-
Lead silicates																
$PbO \cdot SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1247	-	-	-	-	-
$2\ PbO \cdot SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1247	-	-	-	-	-
$4\ PbO \cdot SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1247	-	-	-	-	-
Lead silicate glass	4-II	-	-	-	-	-	1739	-	1741	-	-	-	1743	1745	1747	-
Lead silicon phosphate ($5\ PbO \cdot SiO_2 \cdot P_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1177	-	-	-	-	-
Lead strontium silicate glass	4-II	-	-	-	-	-	-	-	-	-	1751	-	-	-	-	-
Lead sulfide (PbS)	5	-	-	-	-	-	-	-	-	-	-	-	-	688	-	-
Lead telluride (PbTe)	6-I	-	-	-	-	-	594	-	596	-	-	-	-	-	-	-
Lead telluride + Tin telluride	6-I	-	-	-	-	-	717	-	-	-	-	-	-	-	-	-
Lead (meta-)titanate ($PbO \cdot TiO_2$)	4-II	-	-	-	-	-	-	-	1433	-	1435	-	-	-	-	-
Lead tungstate ($PbO \cdot WO_3$)	4-II	-	-	-	-	-	-	1474	-	-	1476	-	-	-	-	-
Lead zirconate ($PbO \cdot ZrO_2$)	4-II	-	-	-	-	-	-	-	1510	-	-	-	-	-	-	-
Leonhardite	4-II	-	-	-	-	-	-	1233	-	-	-	-	-	-	-	-

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Libbey-Owens-Ford plate glass no. 9330	4-II	-	-	-	-	-	-	1791	-	-	-	-	-			-
Lime	4-I	99	99	-	-	-	101	103	105	-	107	-	-		-	109
Lime window glass	4-II	-	-	-	-	-	-	-	1831	-	-	-	-	-	-	-
Lithium + Sodium	2-I	-	-	-	-	-	-	-	-	258	-	-	-	-	-	-
Lithium aluminates																
$Li_2O \cdot Al_2O_3$	4-II	-	-	-	-	-	-	-	-	-	1005	-	-	-	-	-
Li_2O 5 Al_2O_3	4-II	-	-	-	-	-	-	-	-	-	1005	-	-	-	-	-
Lithium aluminum borate glass .	4-II	-	-	-	-	-	-	-	-	-	1617	-	-	-	-	-
Lithium aluminum fluoride (Li_3AlF_6)	5	-	-	-	-	-	-	377	-	-	-	-	-	-	-	-
Lithium aluminum silicate																
$Li_2O \cdot Al_2O_3 \cdot 3\ SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1275	-	-	-	-	-
$Li_2O \cdot Al_2O_3 \cdot 2\ SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1268-1270	-	-	-	-	-
$Li_2O \cdot 1.08\ Al_2O_3 \cdot 3.5\ SiO_2$ . .	4-II	-	-	-	-	-	-	-	-	-	1268	-	-	-	-	-
$Li_2O \cdot Al_2O_3 \cdot 4\ SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1268-1270	-	-	-	-	-
$Li_2O \cdot Al_2O_3 \cdot 6\ SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1268-1270	-	-	-	-	-
$Li_2O \cdot Al_2O_3 \cdot 8\ SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1268, 1275	-	-	-	-	-
$Li_2O \cdot Al_2O_3 \cdot 10\ SiO_2$.	4-II	-	-	-	-	-	-	-	-	-	1275	-	-	-	-	-
Lithium aluminum silicate + + Lead bisilicate	4-II	-	-	-	-	-	-	-	-	-	1566	-	-	-	-	-
Lithium aluminum silicate + + Lead borate	4-II	-	-	-	-	-	-	-	-	-	1560	-	-	-	-	-
Lithium aluminum silicate + + Lithium aluminum germanium oxide	4-II	-	-	-	-	-	-	-	-	-	1568	-	-	-	-	-
Lithium aluminum silicate bodies, barium modified	4-II	-	-	-	-	-	-	-	-	-	1277-1281	-	-	-	-	-
Lithium aluminum silicate glass.	4-II	-	-	-	-	-	-	-	-	-	1757-1759	-	-	-	-	-
Lithium beryllium borate glass .	4-II	-	-	-	-	-	-	-	-	-	1619	-	-	-	-	-
Lithium beryllium fluoride (Li_2BeF_4)	5	-	-	-	-	-	-	379	-	-	-	-	-	-	-	-
Lithium (meta-)borate ($Li_2O \cdot B_2O_3$)	4-II	-	-	-	-	1041	-	-	-	-	-	-	-	-	-	1043
Lithium borate glass	4-II	-	-	-	-	-	1607	-	-	-	-	-	-	-	-	-
Lithium borosilicate glass . . .	4-II	-	-	-	-	-	-	-	-	-	1719	-	-	-	-	-
Lithium calcium silicate glass .	4-II	-	-	-	-	-	-	-	-	-	1761	-	-	-	-	-
Lithium carbide (Li_4C_2)	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium chloride (LiCl and Li_2Cl_2)	5	317	317	-	317	317	-	-	-	-	-	-	-	-	-	319
Lithium cobalt oxide ($Li_xCo_{1-x}O$)	4-II	-	-	-	-	-	1135	-	-	-	-	-	-	-	-	-

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Lithium cobalt nickel oxide [$Li_x(Co_yNi_{1-y})_{1-x}O$]	4-II	-	-	-	-	-	1137	-	1139	-	-	-	-	-	-	-
Lithium copper oxide ($Li_xCu_{1-x}O$)	4-II	-	-	-	-	-	1141	-	1143	-	-	-	-	-	-	-
Lithium fluoride (LiF and Li_2F_2)	5	369	369	369	369	369	-	-	371	-	-	-	-	373	-	375
Lithium fluoride + Potassium fluoride	5	-	-	-	-	-	-	409	-	-	-	-	-	-	-	-
Lithium germanium oxides																
Li_2O GeO_2	4-II	-	-	-	-	-	-	-	-	-	1145	-	-	-	-	-
Li_2O 7 GeO_2	4-II	-	-	-	-	-	-	-	-	-	1145	-	-	-	-	-
2 $Li_2O \cdot GeO_2$	4-II	-	-	-	-	-	-	-	-	-	1145	-	-	-	-	-
3 $Li_2O \cdot$ 2 GeO_2	4-II	-	-	-	-	-	-	-	-	-	1145	-	-	-	-	-
3 $Li_2O \cdot$ 8 GeO_2	4-II	-	-	-	-	-	-	-	-	-	1145	-	-	-	-	-
Lithium hydride (LiH)	5	431	431	431	431	-	-	433	435	-	437	-	-	-	-	-
Lithium lead silicate glass	4-II	-	-	-	-	-	1763		-	-	-	-	-	-	-	-
Lithium-magnesium-barium silicate glass	4-II	-	-	-	-	-	1765		-	-	-	-	-	-	-	-
Lithium magnesium borate glass	4-II	-	-	-	-	-	-	-	-		1621	-	-	-	-	-
Lithium manganese oxide ($Li_xMn_{1-x}O$)	4-II	-	-	-	-		1147	-	-	-	-	-	-	-	-	-
Lithium manganese selenide ($Li_xMn_{1-x}Se$)	6-I	-	-	-	-	-	337	-	339	-	-	-	-	-	-	-
Lithium nickel oxide ($Li_xNi_{1-x}O$)	6-II	-	-	-	-	-	1149	-	1151	-	-	-	-	-	-	-
Lithium nitride (Li_3N)	5	621	-	621	621	-	-	-	-	-	-	-	-	-	-	-
Lithium oxide (Li_2O)	4-I	236	236	236	236	236	-	238	-	-	-	-	-	-	-	240
Lithium potassium aluminum silicate	4-II	-	-	-	-	-	-	-	-	-	1283	-	-	-	-	-
Lithium silicates																
$Li_2O \cdot$ 2 SiO_2	4-II	-	-	-	-	-	-	-	-	-	1260	-	-	-	-	-
2 $Li_2O \cdot SiO_2$	4-II	-	-	-	-	-	-	-	-	-	1260	-	-	-	-	-
Lithium silicate glass	4-II	-	-	-	-	-	1753	-	-	-	1755	-	-	-	-	-
Lithium silicate - quartz body	4-II	-	-	-	-	-	-	-	-	-	1262-1264	-	-	-	-	-
Lithium sodium silicate glass	4-II	-	-	-	-	-	1767	-	-	-	-	-	-	-	-	-
Lithium titanate ($Li_2O \cdot TiO_2$)	4-II	-	-	-	-	-	-	1437	-	-	-	-	-	-	-	-
Lithium uranate ($Li_2O \cdot UO_3$)	4-II	-	1482	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithium zinc ferrite ($Li_xZn_{0.9}Fe_{2.1-x}O_4$)	4-II	-	-	-	-	-	-	1101	-	-	-	-	-	-	-	-
Lockfoam	6-II	962	-	-	-	-	-	-	-	-	966	-	-	-	-	-
Lohm	2-I	-	-	-	-	-	-	-	138	-	-	-	-	-	-	-
LT-1 Metamic cermet	6-II	731	-	-	-	-	-	-	-	-	-	-	735	-	-	-
LT-1B Haynes cermet	6-II	-	-	-	-	-	-	-	-	-	739	-	747	-	-	-
LT-2 Haynes cermet	6-II	-	-	-	-	-	-	-	-	-	743	-	745	-	-	-
Lucalox	4-I	-	-	-	-	-	-	-	11	-	22	-	32	-	-	-
Lucite	6-II	1020	-	-	-	-	-	-	1024	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Lustrex L-2020	6-II	-	1076	-	-	-	-	-	-	-	-	-	-	-	-	-
Lutecium (Lu)	1	616	616	616	616	616	618	620	-	-	-	-	-	-	-	-
Lutecium borides																
LuB_4	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LuB_6	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lutecium carbide (LuC_2)	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lutecium-osmium intermetallics ($LuOs_2$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lutecium oxide (Lu_2O_3)	4-I	-	-	-	-	-	-	242	-	-	244	-	246	-	-	-
M																
Magnesia-alumina spinel	4-II	-	-	-	-	-	-	-	-	1015	-	-	-	-	-	-
Magnesium (Mg)	1	622	622	622	-	622	624	626	628	630	632	-	634	636-638	-	640
Magnesium + ΣX_i	2-II	-	-	-	-	-	1071-1075	1077	1079	-	1081	-	-	-	-	-
Magnesium + Aluminum + ΣX_i .	2-II	1024	1024	1024	-	-	1026	1029	1031	1033	1035	-	-	1038-1042	-	-
Magnesium + Cerium	2-I	-	-	-	-	-	-	-	260	-	-	-	-	-	-	-
Magnesium + Cerium + ΣX_i . .	2-II	-	-	-	-	-	-	-	1045	-	-	-	-	-	-	-
Magnesium + Thorium	2-I	264	262	262	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium + Thorium + ΣX_i . .	2-II	-	1047	1047	-	-	1049-1053	1055	1057	-	1059	-	-	1061	-	-
Magnesium + Zinc	2-I	-	266	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium + Zinc + ΣX_i	2-II	-	1063	1063	-	-	-	1065	1067	-	1069	-	-	-	-	-
Magnesium L120 (British aircraft material spec.)	1	-	-	-	-	-	-	-	-	-	-	-	-	636	-	-
Magnesium alloys (special designation)																
1959	2-I	-	-	-	-	-	-	-	260	-	-	-	-	-	-	-
1960	2-I	-	-	-	-	-	-	-	260	-	-	-	-	-	-	-
1961	2-I	-	-	-	-	-	-	-	260	-	-	-	-	-	-	-
1964	2-II	-	-	-	-	-	-	-	1045	-	-	-	-	-	-	-
1992	2-II	-	-	-	-	-	-	-	1045	-	-	-	-	-	-	-
AM-100A	2-II	-	-	-	-	-	1026	-	-	-	-	-	-	-	-	-
AN-M-29	2-II	1024	-	-	-	-	-	1029	1031	1033	1035	-	-	-	-	-
AX-81-X1	2-II	-	-	-	-	-	-	-	-		1035	-	-	-	-	-
AZ-31	2-II	-	-	-	-	-	-	-	-		-	-	-	1038	-	-
AZ-31A	2-II	-	1024	1024	-	-	1026	-	-	-	1035	-	-	1040	-	-
AZ-31B	2-II	-	1024	1024	-	-	1026	1029	-	-	1035	-	-	1040-1042	-	-
AZ-63A	2-II	-	-	-	-	-	1026	-	-	-	1035	-	-	-	-	-
AZ-80	2-II	-	-	-	-	-	-	1029	-	-	-	-	-	-	-	-
AZ-81	2-II	-	-	-	-	-	-	-	-	-	1035	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Magnesium alloys (special designation) (cont.)																
AZ-91C	2-II	-	-	-	-	-	1026	-	-	-	-	-	-	-	-	-
AZ-92A	2-II	-	-	-	-	-	1026	-	-	-	1035	-	-	-	-	-
DTD 350	2-II	-	-	-	-	-	-	-	1079	-	-	-	-	-	-	-
DTD 360	2-II	-	-	-	-	-	-	-	1079	-	-	-	-	-	-	-
EK-30	2-II	-	-	-	-	-	-	-	-	-	1081	-	-	-	-	-
EK-30A	2-II	-	-	-	-	-	1071	-	-	-	-	-	-	-	-	-
EK-32A	2-II	-	-	-	-	-	-	-	-	-	1081	-	-	-	-	-
EK-33A	2-II	-	-	-	-	-	-	-	-	-	1081	-	-	-	-	-
EK-41	2-II	-	-	-	-	-	-	-	-	-	1081	-	-	-	-	-
EK-41A	2-II	-	-	-	-	-	1073	-	-	-	-	-	-	-	-	-
EZ-33A	2-II	-	-	-	-	-	1075	-	-	-	1081	-	-	-	-	-
H-807	2-II	-	-	-	-	-	-	-	1067	-	-	-	-	-	-	-
H-809	2-II	-	-	-	-	-	-	-	1031	-	-	-	-	-	-	-
H-811	2-II	-	-	-	-	-	-	-	1045, 1067	-	-	-	-	-	-	-
H-812	2-II	-	-	-	-	-	-	-	1045	-	-	-	-	-	-	-
H-817	2-II	-	-	-	-	-	-	-	1067	-	-	-	-	-	-	-
HK-31	2-II	-	-	-	-	-	-	-	-	-	1059	-	-	-	-	-
HK-31A	2-II	-	1047	1047	-	-	1049	1055	-	-	-	-	-	1061	-	-
HK-31XA	2-II	-	-	-	-	-	1049	-	-	-	1059	-	-	-	-	-
HM-21XA	2-II	-	1047	1047	-	-	1051	1055	-	-	-	-	-	-	-	-
HM-31XA	2-I	-	262	262	-	-	-	-	-	-	-	-	-	-	-	-
. . . .	2-II	-	-	-	-	-	-	1077	-	-	-	-	-	-	-	-
Hydronalium 71	2-II	-	-	-	-	-	1026	-	1031	-	-	-	-	-	-	-
HZ-32A	2-II	-	-	-	-	-	1053	-	-	-	-	-	-	-	-	-
HZ-32XA	2-II	-	-	-	-	-	1053	-	-	-	1059	-	-	-	-	-
Magnox B	2-II	-	-	-	-	-	-	-	1079	-	-	-	-	-	-	-
MSR	2-II	-	-	-	-	-	-	-	1079	-	-	-	-	-	-	-
RZ5	2-II	-	-	-	-	-	-	-	1067	-	-	-	-	-	-	-
TZ6	2-II	-	-	-	-	-	-	-	1067	-	-	-	-	-	-	-
Z3Z	2-II	-	-	-	-	-	-	-	1067	-	-	-	-	-	-	-
ZK-60	2-II	-	1063	1063	-	-	-	-	-	-	-	-	-	-	-	-
ZK-60A	2-II	-	-	-	-	-	-	1065	-	-	1069	-	-	-	-	-
ZREO	2-II	-	-	-	-	-	-	-	1045	-	-	-	-	-	-	-
ZT1	2-II	-	-	-	-	-	-	-	1057	-	-	-	-	-	-	-
ZTY	2-II	-	-	-	-	-	-	-	1057	-	-	-	-	-	-	-
Magnesium aluminate ($MgO \cdot Al_2O_3$)	4-II	1007	1007	-	-	-	1009	1011	1013	1015	1017	-	-	-	-	-
Magnesium aluminate + + Magnesium oxide	4-II	-	-	-	-	-	-	-	1520	-	1522	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Magnesium aluminate + Silicon (di-)oxide	4-II	-	-	-	-	-	-	-	1532	-	-	-	-	-	-	-
Magnesium aluminate + Sodium (mon-)oxide	4-II	-	-	-	-	-	-	1524	1526	1528	1530	-	-	-	-	-
Magnesium aluminate spinal	4-II	1007	1007	-	-	-	1009	1011	1013	1015	1017	-	-	-	-	-
Magnesium aluminate spinel with sodium (mon-)oxide	4-II	-	-	-	-	-	-	1524	1526	1528	1530	-	-	-	-	-
Magnesium aluminum borate glass	4-II	-	-	-	-	-	-	-	-	-	1623	-	-	-	-	-
Magnesium aluminum silicate ($2\ MgO \cdot 2\ Al_2O_3 \cdot 5\ SiO_2$)	4-II	-	-	-	-	-	1298	1300	1302	-	1304-1308	-	-	-	-	-
Magnesium aluminum silicate bodies	4-II	-	-	-	-	-	-	-	-	-	1310	-	-	-	-	-
Magnesium aluminum silicate glass	4-II	-	-	-	-	-	-	-	-	-	1769	-	-	-	-	-
Magnesium antimonide (Mg_3Sb_2)	6-I	-	-	-	-	-	67	-	-	-	-	-	-	-	-	-
Magnesium barium cerium titanate [$(Ba_{1-x-y}Mg_xCe_y)O \cdot TiO_2$]	4-II	-	-	-	-	-	1447	-	-	-	-	-	-	-	-	-
Magnesium barium titanate	4-II	-	-	-	-	-	-	-	-	-	1445	-	-	-	-	-
Magnesium beryllium borate glass	4-II	-	-	-	-	-	-	-	-	-	1625	-	-	-	-	-
Magnesium borides																
MgB_2	6-I	-	-	-	-	-	-	182	-	-	-	-	-	-	-	184
MgB_4	6-I	-	-	-	-	-	-	182	-	-	-	-	-	-	-	-
Magnesium-cadmium intermetallics																
MgCd	6-I	-	-	-	-	-	-	644	-	-	-	-	-	-	-	-
$MgCd_3$	6-I	-	-	-	-	-	-	644	-	-	-	-	-	-	-	-
Mg_3Cd	6-I	-	-	-	-	-	-	644	-	-	-	-	-	-	-	-
Magnesium carbonate ($MgCO_3$)	4-II	-	-	-	-	-	-	-	-	-	-	-	-	1047	-	-
Magnesium chloride ($MgCl_2$)	5	-	321	-	-	323	-	-	-	-	-	-	-	-	-	325
Magnesium chromites																
$MgO \cdot Cr_2O_3$	4-II	-	-	-	-	-	1055	1057	-	-	1059	-	-	-	-	-
$MgO \cdot 4\ Cr_2O_3$	4-II	-	-	-	-	-	1055	-	-	-	-	-	-	-	-	-
$4\ MgO \cdot Cr_2O_3$	4-II	-	-	-	-	-	1055	-	-	-	-	-	-	-	-	-
Magnesium chromite spinal	4-II	-	-	-	-	-	-	-	-	-	1059	-	-	-	-	-
Magnesium ferrites																
$MgO \cdot Fe_2O_3$	4-II	-	-	-	-	-	1079	1081	-	-	1083	-	-	-	-	-
$MgO \cdot 2\ FeO$	4-II	-	-	-	-	-	-	-	-	-	1083	-	-	-	-	-
Magnesium fluoride (MgF_2)	5	-	381	-	-	383	-	-	-	-	385	-	-	-	-	387
Magnesium fluoride coating on quartz	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1425	1427	-
Magnesium germanide (Mg_2Ge)	6-I	309	309	-	-	-	311	-	-	-	-	-	-	-	-	-
Magnesium hydride (MgH_2)	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Magnesium-lead intermetallics (Mg_2Pb)	6-I	-	-	-	-	-	650	-	-	-	-	-	-	-	-	-
Magnesium lead silicate glass	4-II	-	-	-	-	-	1771	-	-	-	-	-	-	-	-	-
Magnesium molybdate ($MgO \cdot MoO_3$)	4-II	-	-	-	-	-	-	1117	-	-	-	-	-	-	-	-
Magnesium niobates																
$MgO \cdot Nb_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1125	-	-	-	-	-
$2\ MgO \cdot Nb_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1125	-	-	-	-	-
$3\ MgO \cdot Nb_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1125	-	-	-	-	-
$4\ MgO \cdot Nb_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1125	-	-	-	-	-
Magnesium nitride (Mg_3N_2)	5	-	-	-	-	-	-	633	-	-	-	-	-	-	-	-
Magnesium oxides																
Magnesium oxide (MgO)	4-I	248	248	-	-	-	250	252	254	257	259	263	265-267	269	-	271
M-300	4-I	-	-	-	-	-	-	-	-	-	259	-	-	-	-	-
PC-235	4-I	-	-	-	-	-	-	-	-	257	-	-	-	-	-	-
SR-2808	4-I	-	-	-	-	-	-	-	-	257	-	-	-	-	-	-
Magnesium oxide + Aluminum oxide	4-I	-	-	-	-	-	-	-	-	723	-	-	-	-	-	-
Magnesium oxide + Aluminum oxide + Beryllium oxide	4-I	-	-	-	-	-	-	-	-	-	725	-	-	-	-	-
Magnesium oxide + Aluminum oxide + Iron(ic) oxide + + Silicon (di-)oxide + Calcium oxide	4-I	-	-	-	-	-	-	-	727	-	-	-	-	-	-	-
Magnesium oxide + Beryllium oxide	4-I	-	-	-	-	-	-	-	729	-	731	-	-	-	-	-
Magnesium oxide + Calcium oxide	4-I	-	-	-	-	-	-	-	-	733	735	-	-	-	-	-
Magnesium oxide + Calcium oxide + Iron(ic) oxide	4-I	-	-	-	-	-	-	-	-	737	-	-	-	-	-	-
Magnesium oxide + Chromium (sesqui-)oxide + Aluminum oxide + Iron(ic) oxide + + Silicon (di-)oxide	4-I	-	-	-	-	-	-	-	739	-	-	-	-	-	-	-
Magnesium oxide + Chromium (sesqui-)oxide + Iron(ic) oxide + Aluminum oxide + + Silicon (di-)oxide + + Iron(ous) oxide	4-I	-	-	-	-	-	-	-	741	-	-	-	-	-	-	-
Magnesium oxide + Iron(ic) oxide + Calcium oxide	4-I	-	-	-	-	-	-	-	743	-	-	-	-	-	-	-
Magnesium oxide + Magnesium aluminate	4-II	-	-	-	-	-	-	-	1536	-	-	-	-	-	-	-
Magnesium oxide + Magnesium silicate	4-II	-	-	-	-	-	-	-	1538	-	-	-	-	-	-	-
Magnesium oxide + Nickel (mon-)oxide	4-I	-	-	-	-	-	745	-	747	-	-	-	-	-	-	-
Magnesium oxide + Silicon (di-)oxide	4-I	-	-	-	-	-	-	-	749	-	751	-	-	-	-	-

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Magnesium oxide + Talc	4-II	-	-	-	-	-	-	-	1538	-	-	-	-	-	-	-
Magnesium oxide + Tin(ic) oxide	4-I	-	-	-	-	-	-	-	753	-	-	-	-	-	-	-
Magnesium oxide + Titanium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	755	-	-	-	-	-
Magnesium oxide + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	788	-	-	-	-	-
Magnesium oxide + Uranium (di-)oxide	4-I	-	-	-	-	-	-	-	757	-	-	-	-	-	-	-
Magnesium oxide + Yttrium oxide	4-I	-	-	-	-	-	-	-	-	-	759	-	-	-	-	-
Magnesium oxide + Zinc oxide .	4-I	-	-	-	-	-	-	-	761	-	-	-	-	-	-	-
Magnesium silicates																
$MgO \cdot SiO_2$	4-II	1285	1285	-	-	-	1287	1289	1293	-	1295	-	-	-	-	-
$2\ MgO \cdot SiO_2$	4-II	-	-	-	-	-	-	1289	1291	-	1295	-	-	-	-	-
$3\ MgO \cdot 4\ SiO_2 \cdot H_2O$	4-II	-	-	-	-	-	-	1289	-	-	-	-	-	-	-	-
Magnesium (ortho-)silicate + + Zinc (ortho-)silicate	4-II	-	-	-	-	-	-	-	-	-	1571	-	-	-	-	-
Magnesium silicides (Mg_2Si) . .	6-I	-	419	-	-	-	421	-	-	-	-	-	-	-	-	-
Magnesium silicide stannide ($Mg_2Si_xSn_{1-x}$)	6-I	-	-	-	-	-	537	-	539	-	-	-	-	-	-	-
Magnesium stannate ($MgO \cdot SnO_2$)	4-II	-	-	-	-	-	-	-	1361	-	-	-	-	-	-	-
Magnesium stannide (Mg_2Sn) . .	6-I	533	533	-	-	-	535	-	-	-	-	-	-	-	-	-
Magnesium titanates																
$MgO \cdot TiO_2$	4-II	-	-	-	-	-	1439	1441	-	-	1443	-	-	-	-	-
$MgO \cdot 2\ TiO_2$	4-II	-	-	-	-	-	1439	1441	-	-	1443	-	-	-	-	-
$MgO \cdot 5\ TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1443	-	-	-	-	-
$2\ MgO \cdot TiO_2$	4-II	-	-	-	-	-	1439	1441	-	-	1443	-	-	-	-	-
$2\ MgO \cdot 3\ TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1443	-	-	-	-	-
Magnesium titanate porcelain . .	5	1003	-	-	-	-	-	-	1017	-	-	-	-	-	-	-
Magnesium tungstate ($MgO \cdot WO_3$)	4-II	-	-	-	-	-	-	1478	-	-	-	-	-	-	-	-
Magnesium tungsten lead oxide ($2\ PbO \cdot MgO \cdot WO_3$).	4-II	-	-	-	-	-	-	-	-	-	1153	-	-	-	-	-
Magnesium vanadates																
$MgO \cdot V_2O_5$	4-II	-	-	-	-	-	-	1492	-	-	-	-	-	-	-	-
$2\ MgO \cdot V_2O_5$	4-II	-	-	-	-	-	-	1492	-	-	-	-	-	-	-	-
Magnesium uranate ($MgO \cdot UO_3$) .	4-II	-	1482	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium zirconate ($MgO \cdot ZrO_2$)	4-II	-	-	-	-	-	-	-	-	-	1512	-	-	-	-	-
Magnetite	4-I	212	212	-	-	-	-	220	-	-	-	-	-	-	-	-
Manganese (Mn)	1	642	642	-	-	642	644	646	-	-	648	-	-	650	-	652
Manganese, electrolytic	1	-	-	-	-	-	-	646	-	-	648	-	-	-	-	-
Manganese + Aluminum	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
Manganese + Copper	2-I	-	-	-	-	-	271	273	-	-	275-277	-	-	-	-	-

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Manganese + Copper + ΣX_i . . .	2-II	-	-	-	-	-	-	-	-	-	1083-1089	-	-	-	-	-
Manganese + Nickel	2-I	-	-	-	-	-	279	-	-	-	281	-	-	-	-	-
Manganese + Nickel + ΣX_i . . .	2-II	-	-	-	-	-	-	-	-	-	1091-1097	-	-	-	-	-
Manganese + Titanium	2-I	283, 519	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese alloys (special designations)																
A-47	2-I	-	-	-	-	-	-	266	-	-	-	-	-	-	-	-
A-48	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-49	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-49.5	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-50	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-51	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-52	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-53	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-54	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-55	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-56	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-57	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-58	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-59	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
A-60	2-I	-	-	-	-	-	-	268	-	-	-	-	-	-	-	-
Manganese aluminate ($MnO \cdot Al_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	1019	-	-	-	-	-
Manganese aluminum carbide (Mn_3AlC)	5	-	-	-	-	-	-	73	-	-	-	-	-	-	-	-
Manganese antimonide ($MnSb$) .	6-I	-	-	-	-	-	69	-	-	-	-	-	-	-	-	-
Manganese arsenide (Mn_7As) . .	6-I	-	94	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese arsenide telluride ($MnTe_{1-x}As_x$)	6-I	-	-	-	-	-	600	-	602	-	-	-	-	-	-	-
Manganese carbide (Mn_3C) . . .	5	67	67	-	-	-	-	69	-	-	-	-	-	-	-	71
Manganese chromite ($MnO \cdot Cr_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	1061	-	-	-	-	-
Manganese ferrite ($MnO \cdot Fe_2O_3$).	4-II	1085	-	-	-	-	-	-	-	-	-	-		-	-	-
Manganese nickel	2-II	-	-	-	-	-	-	-	-	-	1273	-	-	-	-	-
Manganese nitride (Mn_4N) . . .	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese oxides																
MnO	4-I	-	-	-	-	-	-	273	-	-	281	-	-	-	-	-
MnO_2	4-I	-	-	-	-	-	-	275	-	-	281	-	-	-	-	-
Mn_2O_3	4-I	-	-	-	-	-	-	277	-	-	-	-	-	-	-	-
Mn_3O_4	4-I	-	-	-	-	-	-	-	279	-	-	-	-	-	-	-
Manganese (sesqui-)oxide + + Magnesium oxide	4-I	-	-	-	-	-	-	-	763	-	-	-	-	-	-	-

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Manganese-palladium intermetallics (MnPd)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese phosphides																
MnP	5	635	635	-	-	-	639	-	-	-	-	-	-	-	-	-
Mn_2P	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Mn_3P	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Mn_3P_2	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese selenide (MnSe)	6-I	-	-	-	-	-	-	341	-	-	-	-	-	-	-	-
Manganese silicate ($MnO \cdot SiO_2$)	4-II	-	-	-	-	-	-	1312	-	-	1314	-	-	-	-	-
Manganese silicides																
$MnSi_{0.3-0.5}$	6-I	-	-	-	-	-	-	427	-	-	-	-	-	-	-	-
$MnSi$	6-I	-	423	-	-	-	425	427	-	-	431	-	-	-	-	-
$MnSi_2$	6-I	-	-	-	-	-	425	427	429	-	-	-	-	-	-	-
Mn_3Si	6-I	-	423	-	-	-	-	-	-	-	-	-	-	-	-	-
Mn_5Si_3	6-I	-	423	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese telluride (MnTe)	6-I	-	-	-	-	-	-	598	-	-	-	-	-	-	-	-
Manganese zinc carbide (Mn_3ZnC)	5	-	-	-	-	-	-	75	-	-	-	-	-	-	-	-
Manganin	2-II	-	-	-	-	-	978	-	-	-	-	-	-	-	-	-
Marlex 20	6-II	-	-	-	-	-	-	-	-	-	1045	-	-	-	-	-
Marlex 50	6-II	-	-	-	-	-	-	-	-	-	1045	-	-	-	-	-
Massicot	4-I	-	-	-	-	-	-	234	-	-	-	-	-	-	-	-
Matte silver	1	-	-	-	-	-	-	-	-	-	-	910	-	-	-	-
Melamine formaldehyde	6-II	-	1014	-	-	-	-	-	-	-	-	-	-	-	-	-
Melamine formaldehyde, reinforced	6-II	-	-	-	-	-	-	-	-	-	1101	-	-	-	-	-
Melamine formaldehyde, alpha cellulose filled	6-II	-	-	-	-	-	-	-	-	-	1018	-	-	-	-	-
Melamine formaldehyde, mineral filled	6-II	-	-	-	-	-	1016	-	-	-	-	-	-	-	-	-
Melamine-formaldehyde resin, reinforced	6-II	-	-	-	-	-	-	-	-	1128	-	-	-	-	-	-
Melmac 592	6-II	-	-	-	-	-	1016	-	-	-	-	-	-	-	-	-
Melmac 1077	6-II	-	-	-	-	-	-	-	-	-	1018	-	-	-	-	-
Melmac 1079	6-II	-	-	-	-	-	-	-	-	-	1018	-	-	-	-	-
Melmac 1502	6-II	-	-	-	-	-	-	-	-	-	1018	-	-	-	-	-
Merwinite	4-II	-	-	-	-	-	-	1239	-	-	-	-	-	-	-	-
Mercuric selenide (HgSe)	6-I	-	-	-	-	-	-	343	-	-	-	-	-	-	-	-
Metal cermets	6-II	925	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metco XP-1103	6-II	-	-	-	-	-	-	-	-	-	-	1309	1311	-	-	-
Metco XP-1106	6-II	-	-	-	-	-	-	-	-	-	-	1325	1327	-	-	-
Metco XP-1109	6-II	-	-	-	-	-	-	-	-	-	-	1407	1409	-	-	-
Metco XP-1110	6-II	-	-	-	-	-	-	-	-	-	-	1421	1423	-	-	-

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Mica																
Mica	5	983	-	-	-	-	985-987	-	989-991	-	993-1001	-	-	-	-	-
Biotite	5	-	-	-	-	-	-	-	-	-	997	-	-	-	-	-
Cericite	5	-	-	-	-	-	-	-	-	-	993	-	-	-	-	-
Glass bonded	5	-	-	-	-	-	987	-	-	-	-	-	-	-	-	-
Illite	5	-	-	-	-	-	-	-	-	-	993	-	-	-	-	-
Iron	5	-	-	-	-	-	-	-	-	-	997	-	-	-	-	-
Magnesium	5	-	-	-	-	-	-	-	-	-	999	-	-	-	-	-
Muscovite	5	-	-	-	-	-	985	-	-	-	1001	-	-	-	-	-
Phlogophite	5	-	-	-	-	-	-	-	-	-	999	-	-	-	-	-
Ripidolite	5	-	-	-	-	-	-	-	-	-	995	-	-	-	-	-
Synthetic	5	-	-	-	-	-	985	-	991	-	-	-	-	-	-	-
Synthetic, barium-	5	-	-	-	-	-	985	-	-	-	-	-	-	-	-	-
Zinn waldite	5	-	-	-	-	-	-	-	-	-	995	-	-	-	-	-
Micro-Quartz type II	6-II	-	-	-	-	-	-	1216	-	-	-	-	-	-	-	-
MIL-C-7350 type I and II	6-II	-	-	-	-	-	-	-	-	1275	-	-	-	-	-	-
MIL-C-8021 type I	6-II	-	-	-	-	-	-	-	-	1275	-	-	-	-	-	-
MIL-C-8087	6-II	-	-	-	-	-	-	954	956	-	958	-	-	-	-	-
Mineral aluminum silicates	4-II	-	-	-	-	-	1187	-	-	-	-	-	-	-	-	-
Mo-9-8 molybdenum	1	-	-	-	-	-	-	658	-	-	-	-	-	-	-	-
Molybdenite	5	690	690	-	-	-	-	-	-	-	-	-	-	692	-	-
Molybdenum (Mo)	1	654	654	-	-	654	656	658	660	663	665	667	669-675	677	-	679
Molybdenum coated with boron	6-II	-	-	-	-	-	-	-	-	-	-	-	1289	-	-	-
Molybdenum coated with carbon	6-II	-	-	-	-	-	-	-	-	-	-	1293	1295	-	-	-
Molybdenum coated with silicide	6-II	-	-	-	-	-	-	-	-	-	-	-	1467-1469	1471	-	-
Molybdenum coated with titanium (di-)oxide and aluminum	6-II	-	-	-	-	-	-	-	-	-	-	-	1395	-	-	-
Molybdenum coating on iron	6-II	-	-	-	-	-	-	-	-	-	-	1309	1311	-	-	-
Molybdenum + ΣX_i	2-II	1109	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum + Iron	2-I	285	-	-	-	-	-	287	289	-	-	-	-	-	-	-
Molybdenum + Nickel + ΣX_i	2-II	1099	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum + Niobium + ΣX_i	2-II	1101	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum + Silicon	2-I	-	-	-	-	-	-	-	-	-	-	-	291	-	-	-
Molybdenum + Titanium	2-I	-	-	-	-	-	293	295	297	299	301	-	303-307	309	-	-
Molybdenum + Titanium + ΣX_i	2-II	1103	-	-	-	-	-	1105	-	-	1107	-	-	-	-	-
Molybdenum + Tungsten	2-I	-	-	-	-	-	-	311	313	315	317	-	319	-	-	-
Molybdenum aluminides																
MoAl	6-I	-	9	-	-	-	-	-	-	-	11	-	-	-	-	-
$MoAl_2$	6-I	-	-	-	-	-	-	-	-	-	11	-	-	-	-	-
Mo_3Al	6-I	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-

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Molybdenum beryllides																
$MoBe_2$	6-I	-	102	-	-	-	-	-	-	-	-	-	-	-	-	-
$MoBe_{12}$	6-I	102	-	-	-	-	-	104	106	-	-	-	-	-	-	-
Molybdenum borides																
MoB	6-I	-	186	-	-	-	-	188	-	-	-	-	-	-	-	192
MoB_2	6-I	-	186	186	-	-	-	188	-	-	190	-	-	-	-	-
Mo_2B	6-I	-	186	-	-	-	-	188	-	-	-	-	-	-	-	192
Mo_2B_5	6-I	-	186	-	-	-	-	-	-	-	-	-	-	-	-	-
Mo_3B_2	6-I	-	186	-	-	-	-	-	-	-	-	-	-	-	-	-
(Di-) molybdenum boride + + Molybdenum (di-) silicide .	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
(Di-) molybdenum boride + + (Penta-) niobium (tri-) - silicide	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
(Di-) molybdenum boride + + Tantalum (di-) silicide . . .	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
(Di-) molybdenum boride + + (Penta-) tantalum (tri-) - silicide	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum carbides																
MoC	5	-	-	-	-	-	-	-	-	-	87	-	-	-	-	-
Mo_2C	5	77	77	-	-	-	79	81	83	-	85	-	89	-	-	-
Molybdenum chromium silicides																
(Mo, Cr, Si)	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(Mo, Cr) Si_2 . . .	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum germanide (Mo_5Ge_3)	6-I	-	313	-	-	-	-	-	-	-	-	-	-	-	-	315
Molybdenum nitride (Mo_2N) . .	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum oxides																
MoO_2	4-I	-	-	-	-	-	-	285	-	-	-	-	-	-	-	-
MoO_3	4-I	283	283	283	-	-	-	287	-	-	-	-	-	289	-	291
Molybdenum phosphide (MoP) .	5	635	635	-	-	-	639	-	-	-	-	-	-	-	-	-
Molybdenum selenides ($MoSe_2$) .	6-I	-	-	-	-	-	367	-	369	-	-	-	-	-	-	-
Molybdenum silicides																
$MoSi_2$	6-I	433	433	-	-	-	435	437	439	-	441	-	445-447	449	-	-
Mo_3Si	6-I	-	-	-	-	-	-	-	-	-	443	-	-	-	-	451
Mo_5Si_3	6-I	433	433	-	-	-	-	-	-	-	443	-	-	-	-	-
Molybdenum (di-) silicide + + Calcium aluminate .	5	-	-	-	-	-	-	-	-	-	904	-	-	-	-	-
Molybdenum (di-) silicide + + Chromium (sesqui-) oxide. .	5	-	-	-	-	-	-	-	-	-	-	-	906	-	-	-
Molybdenum (di-) silicide + + Chromium (di-) silicide . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum (di-) silicide + + Copper cermets	6-II	923	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Molybdenum (di-) silicide + + Molybdenum (tri-) oxide. . .	5	-	-	-	-	-	-	-	-	-	-	-	908-910	912	-	-
Molybdenum (di-) silicide + + Molybdenum (tri-) oxide + + Silicon (di-) oxide	5	-	-	-	-	-	-	-	-	-	-	-	914-916	918	-	-
Molybdenum (di-) silicide + + Silicon (di-) oxide	5	-	-	-	-	-	-	-	-	-	-	-	920-922	924	-	-
Molybdenum (di-) silicide + + Zirconium (di-) boride . . .	6-I	-	689, 724	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum-silicon-titanium cermet	6-II	930	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum sulfide (MoS_2). . .	5	690	690	-	-	-	-	-	-	-	-	-	-	692	-	-
Molybdenum tellurides ($MoTe_2$).	6-I	-	-	-	-	-	638	-	640	-	-	-	-	-	-	-
Molybdenum-titanium alloys coated with Chromalloy W-2 .	6-II	-	-	-	-	-	-	-	-	-	-	-	1505-1509	-	-	-
Molybdenum-titanium alloy coated with Durak-MG	6-II	-	-	-	-	-	-	-	-	-	-	-	1501-1503	-	-	-
Molybdenum-zirconium inter-metallics (Mo_2Zr)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Monel	2-I	-	-	-	-	-	-	-	-	-	343	-	-	-	-	-
. . . . . .	2-II	-	-	-	-	-	-	1239	1241	-	1247-1251	-	1253	-	-	-
Monel 400	2-II	-	-	-	-	-	-	1239	1241	-	1247-1249	-	1253	-	-	-
Monel 401	2-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
Monel 403	2-II	-	-	-	-	-	-	-	-	-	1249	-	-	-	-	-
Monel 404	2-II	-	-	-	-	-	-	-	-	-	1251	-	-	-	-	-
Monel 501	2-II	-	-	-	-	-	-	-	-	-	1245	-	-	-	-	-
Monel, H-	2-II	-	-	-	-	-	-	-	1241	-	-	-	-	-	-	-
Monel, K-	2-II	1237	-	-	-	-	-	1239	1241	1243	1245	-	-	-	-	-
Monel K-500	2-II	1237	-	-	-	-	-	1239	1241	1243	1245	-	-	-	-	-
Monel 5700, K-	2-II	-	-	-	-	-	-	-	-	-	-	-	1255	-	-	-
Monel, KR-	2-II	-	-	-	-	-	-	-	-	-	1245	-	-	-	-	-
Monel, R	2-II	-	-	-	-	-	-	-	1241	-	1247	-	-	-	-	-
Monel, R-405	2-II	-	-	-	-	-	-	-	1241	-	1247	-	-	-	-	-
Monel, S-	2-II	-	-	-	-	-	-	-	1241	-	-	-	-	-	-	-
Monel, Si-	2-II	-	-	-	-	-	-	-	1241	-	-	-	-	-	-	-
Moplen	6-II	1076	1076	-	-	-	-	1078	1080	-	1088	-	-	-	-	-
Mullite	4-II	-	-	-	-	-	-	1189	1191	1193	1197	-	1201	-	1203	-
Mullite MV-20	4-II	-	-	-	-	-	-	-	-	1193	-	-	1201	-	-	-
Mullite MV-30	4-I	-	-	-	-	-	-	-	-	-	617	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Mullite + Alumina	4-II	-	-	-	-	-	-	-	1562	-	-	-	-	-	-	-
Muscovite	4-II	-	-	-	-	-	-	1573	-	-	-	-	-	-	-	-
MX-4926 carbon-phenolic laminate	6-II	-	-	-	-	-	-	1134	-	-	-	-	-	-	-	-
Mylar coated with aluminum . .	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1287	-	-
Mylar coated with copper . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1301	-	-
Mylar coated with gold	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1307	-	-
Mylar coated with silver	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1323	-	-
N																
NBS coating A-418 on Inconel . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1361-1363	-	-	-
NBS coating A-418 on stainless steel	6-II	-	-	-	-	-	-	-	-	-	-	-	1365-1367	-	-	-
NBS coating N-143 on Inconel . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1353-1355	-	-	-
NBS coating N-143 on stainless steel	6-II	-	-	-	-	-	-	-	-	-	-	-	1357-1359	-	-	-
Neodymia	4-I	293	293	-	-	-	-	295	-	-	297	-	-	-	-	-
Neodymium (Nd)	1	681	681	681	681	682	684	686	-	-	688	-	-	-	-	690
Neodymium + Magnesium . . .	2-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium + Magnesium + ΣX_i .	2-II	1115	1115	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium aluminide (NdAl) . .	6-I	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-bismuth intermetallics (NdBi)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium borides																
NdB_4	6-I	296	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NdB_6	6-I	296	296	-	-	-	300	-	-	-	-	-	-	-	-	-
Neodymium-cadmium intermetallics																
NdCd	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$NdCd_2$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$NdCd_3$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$NdCd_{11}$	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium carbides																
NdC_2	5	294	294	-	-	-	-	-	-	-	-	-	-	-	-	-
Nd_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium chloride ($NdCl_3$) . .	5	339	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-cobalt intermetallics ($NdCo_5$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-copper intermetallics ($NdCu_5$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-gallium intermetallics ($NdGa_2$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Neodymium germanides ($NdGe_2$)	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium hydride (NdH_2)	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-lead intermetallics ($NdPb_3$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-mercury intermetallics (NdHg)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-nickel intermetallics ($NdNi_5$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium nitride (NdN)	5	621	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium-osmium intermetallics ($NdOs_2$)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium oxides																
NdO	4-I	293	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nd_2O_3	4-I	293	293	-	-	-	-	295	-	-	297	-	-	-	-	-
Neodymium phosphide (NdP)	5	635	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium selenides																
NdSe	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nd_2Se_3	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nd_3Se_4	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium silicide ($NdSi_2$)	6-I	523	524	-	-	-	527	-	-	-	-	-	-	-	-	-
Neodymium-silver intermetallics (NdAg)	6-I	680	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neodymium sulfides																
NdS	5	694	694	-	-	-	-	-	-	-	696	-	-	-	-	-
NdS_2	5	-	694	-	-	-	-	-	-	-	-	-	-	-	-	-
Nd_2S_3	5	694	694	-	-	-	-	-	-	-	696	-	-	-	-	-
Nd_3S_4	5	694	694	-	-	-	-	-	-	-	-	-	-	-	-	-
Neoprene GN	6-II	-	-	-	-	-	-	-	-	1066	-	-	-	-	-	-
Neoprene W	6-II	1051	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nepheline syenite	4-II	-	-	-	-	-	-	-	-	-	1320	-	-	-	-	-
Neptunium (Np)	1	692	692	-	-	-	-	-	-	-	-	-	-	-	-	-
Neptunium + Calcium + ΣX_i	2-II	1111	-	-	-	-	-	1113	-	-	-	-	-	-	-	-
Neptunium + Uranium	2-I	321	321	-	-	-	-	-	-	-	-	-	-	-	-	-
Neptunium bromide ($NpBr_3$)	5	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neptunium chlorides																
$NpCl_3$	5	339	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$NpCl_4$	5	339	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Neptunium (di-)oxide (NpO_2)	4-I	-	-	-	-	-	-	299	-	-	-	-	-	-	-	-
Nichrome	2-I	-	-	-	-	-	-	-	-	-	-	-	331	-	-	-
Nickel (Ni)	1	694	694	-	-	-	696	698	700	702	704	706	708-714	716-718	-	720
Nickel, carbonyl	1	-	694	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel, electrolytic	1	694	694	-	-	-	-	698	-	-	704	-	-	716	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electr. Resis...ty	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Nickel coated with aluminum phosphate	6-II	-	-	-	-	-	-	-	-	-	-	-	1429	-	-	-
Nickel + ΣX_i	2-II	1307	-	-	-	-	1309	1311	1313	1315	-	-	-	-	-	-
Nickel + Aluminum	2-I	-	-	-	-	-	325	-	-	-	-	-	-	-	-	-
Nickel + Aluminum + ΣX_i . . .	2-II	-	-	-	-	-	-	-	-	-	1117	-	-	-	-	-
Nickel + Chromium	2-I	-	-	-	-	-	327	329	-	-	-	-	331-333	-	-	-
Nickel + Chromium + ΣX_i . . .	2-II	1119, 1122	1119	-	-	-	1124	1126-1132	1134-1145	1148-1150	1152-1170	-	1172-1201	1203-1215	-	-
Nickel + Cobalt	2-I	335	-	-	-	-	-	-	337	-	-	-	-	-	-	-
Nickel + Cobalt + ΣX_i	2-II	1219	1217	-	-	-	1221	-	1223	-	1225-1227	-	1229-1231	-	-	-
Nickel + Copper	2-I	-	-	-	-	-	339	341	-	-	343	-	-	-	-	-
Nickel + Copper + ΣX_i	2-II	1237	-	-	-	-	-	1239	1241	1243	1245-1251	-	1253-1255	-	-	-
Nickel + Iron	2-I	-	-	-	-	-	345	347	349	-	-	-	-	-	-	-
Nickel + Iron + ΣX_i	2-II	1257	-	-	-	-	-	1259	1261	-	1263-1267	-	1269	-	-	-
Nickel + Manganese	2-I	-	-	-	-	-	351	-	353	-	355	-	-	-	-	-
Nickel + Manganese + ΣX_i . . .	2-II	-	-	-	-	-	-	1271	-	-	1273	-	-	-	-	-
Nickel + Molybdenum + ΣX_i . .	2-II	1277	1275	-	-	-	-	1279	1281	-	1283-1287	1289	1291-1295	1297	-	-
Nickel + Palladium	2-I	-	-	-	-	-	357	-	-	-	-	-	-	-	-	-
Nickel + Palladium + ΣX_i . . .	2-II	-	-	-	-	-	-	-	-	-	1299	-	-	-	-	-
Nickel + Silicon	2-I	-	-	-	-	-	359	-	-	-	-	-	-	-	-	-
Nickel + Silicon + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	1301	-	-	-	-	-
Nickel + Titanium + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	1303	-	-	-	-	-
Nickel + Tungsten + ΣX_i	2-II	-	-	-	-	-	-	-	-	-	1305	-	-	-	-	-
Nickel 200	2-I	-	-	-	-	-	-	-	-	-	355	-	-	-	-	-
(also) . . .	2-II	1307	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel 204	2-II	-	-	-	-	-	-	-	-	-	1227	-	-	-	-	-
Nickel 211	2-I	-	-	-	-	-	-	-	-	-	355	-	-	-	-	-
Nickel 270	1	-	-	-	-	-	-	-	-	-	704	-	-	-	-	-
Nickel A	1	-	-	-	-	-	-	-	700	-	-	-	-	-	-	-
(also) . . .	2-I	-	-	-	-	-	-	-	-	-	355	-	-	-	-	-
(also) . . .	2-II	1307	-	-	-	-	-	-	1313	-	-	-	-	-	-	-
Nickel, admiralty	2-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
Nickel D	2-I	-	-	-	-	-	-	-	-	-	355	-	-	-	-	-
(also) . . .	2-II	-	-	-	-	-	-	-	1313	-	-	-	-	-	-	-
Nickel, grade A	1	694	-	-	-	-	-	-	700	-	704	706	710-712	718	-	-
(also) . . .	2-I	-	-	-	-	-	-	-	353	-	-	-	-	-	-	-
(also) . . .	2-II	-	-	-	-	-	-	-	1223	-	1263, 1301	-	-	-	-	-
Nickel L	1	-	-	-	-	-	-	-	700	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Nickel alloys (special designations)																
60 - 15 Cr (ASTM B83-46) . .	2-II	1257	-	-	-	-	-	1259	-	-	-	-	-	-	-	-
80 Ni - 20 Cr	2-II	-	-	-	-	-	-	1130	1144	-	-	-	-	-	-	-
90 Ni - 10 Cr	2-II	-	-	-	-	-	-	1126	-	-	-	-	-	-	-	-
AISI alloy (see AISI designations)																
Alumel	2-II	-	-	-	-	-	-	1271	-	-	-	-	-	-	-	-
Astroloy	2-II	-	-	-	-	-	-	-	-	-	-	-	1229	1231	-	-
Brazing alloys GE-62	2-II	-	-	-	-	-	-	-	-	-	1168	-	-	-	-	-
Brazing compound GEH 62-V.	2-II	-	-	-	-	-	-	1130	-	-	-	-	-	-	-	-
Chromel-P	2-I	-	-	-	-	-	-	329	-	-	-	-	-	-	-	-
Contracid	2-II	-	-	-	-	-	-	-	1261	-	-	-	-	-	-	-
D-979	2-II	-	-	-	-	-	-	-	1261	-	-	-	-	-	-	-
Duranickel 301	2-II	-	-	-	-	-	-	-	-	-	1117	-	-	-	-	-
DVL 32	2-II	1219	-	-	-	-	-	-	-	-	1225	-	-	-	-	-
DVL 321a	2-II	1219	-	-	-	-	-	-	-	-	1225	-	-	-	-	-
DVL 321i	2-II	1219	-	-	-	-	-	-	-	-	1225	-	-	-	-	-
DVL 325a	2-II	1219	-	-	-	-	-	-	-	-	1225	-	-	-	-	-
EI-435	2-II	-	-	-	-	-	-	1132	1144	1150	-	-	-	-	-	-
EI-437	2-II	-	-	-	-	-	-	-	1140	-	-	-	-	-	-	-
EI-607	2-II	-	-	-	-	-	-	-	1146	-	1158	-	-	-	-	-
EI-617	2-II	-	-	-	-	-	-	-	-	-	1170	-	-	-	-	-
GMR-235	2-II	-	-	-	-	-	-	-	-	-	1161	-	-	-	-	-
Haskins alloy 667.	2-II	-	-	-	-	-	-	-	-	-	1273	-	-	-	-	-
Haynes alloy no. R-41. . . .	2-II	-	-	-	-	-	-	-	-	-	1154	-	-	-	-	-
Haynes alloy X	2-II	-	-	-	-	-	-	-	-	-	-	-	1172	-	-	-
Hastelloys (see Hastelloy)																
HU	2-II	-	-	-	-	-	-	-	-	-	1265	-	-	-	-	-
HW	2-II	-	-	-	-	-	-	-	-	-	1267	-	-	-	-	-
Illium alloy	2-II	-	-	-	-	-	-	-	-	-	1156	-	-	-	-	-
Illium G	2-II		-	-	-	-	-	-	1136	-	-	-	-	-	-	-
Illium R	2-II	-	-	-	-	-	-	-	1138	-	-	-	-	-	-	-
Inco (see Inco)																
Incoloys (see Incoloy)																
Inconels (see Inconel)																
INOR-8	2-II	-	-	-	-	-	-	-	1281	-	1285	-	1293	-	-	-
J-1500	2-II	-	-	-	-	-	-	-	1136	-	1166	-	-	-	-	-
J-1610	2-II	-	-	-	-	-	-	-	1134	-	1156	-	-	-	-	-
M-252	2-II	-	-	-	-	-	-	1130	1136	-	1166	-	1180, 1197	1209, 1215	-	-
Monels (see Monel)																

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Nickel alloys (special designations) (cont.)																
Ni-O-Nel	2-II	-	-	-	-	-	-	-	-	-	1267	-	-	-	-	-
Nichrome	2-I	-	-	-	-	-	-	-	-	-	-	-	331	-	-	-
Nichrome V	2-II	-	-	-	-	-	-	1130	1144	-	-	-	-	-	-	-
Nimonics (see Nimonic)																
OKh 20N60B	2-II	-	-	-	-	-	-	1132	1136	1150	-	-	-	-	-	-
OKh 21N78T	2-II	-	-	-	-	-	-	1132	-	1150	-	-	-	-	-	-
Permanickel 300	2-II	1257	-	-	-	-	-	-	-	-	1303	-	-	-	-	-
RCA-N91	2-I	-	-	-	-	-	-	-	337	-	-	-	-	-	-	-
RCA-N97	2-I	-	-	-	-	-	-	-	337	-	-	-	-	-	-	-
Refractaloy 26	2-II	-	-	-	-	-	-	-	1223	-	-	-	-	-	-	-
Rene 41	2-II	1122	-	-	-	-	-	1130	1134	-	1156	-	1184, 1199	1211	-	-
SM-200	2-II	-	-	-	-	-	-	-	-	-	1305	-	-	-	-	-
Udimets (see Udimet)																
Unitemp Waspalloy	2-II		-	-	-	-	-	-	1138	-	-	-	-	-	-	-
Waspalloy	2-II	-	-	-	-	-	-	-	1136	-	1154	-	-	-	-	-
Nickel aluminate ($NiO \cdot Al_2O_3$) . .	4-II	-	-	-	-	-	-	-	-	-	1021	-	1023	-	-	-
Nickel aluminides																
NiAl	6-I	-	-	-	-	-	-	-	-	-	13	-	15-17	19	-	-
Ni_3Al	6-I	-	-	-	-	-	-	-	-	-	13	-	15-17	19	-	-
Nickel aluminides coating on Inconel	6-II	-	-	-	-	-	-	-	-	-	-	-	1453-1455	1457	-	-
Nickel aluminide + Aluminum oxide	5	-	-	-	-	-	-	-	-	-	-	-	844-846	848	-	-
Nickel aluminide + Nickel (mon-)oxide	5	-	-	-	-	-	-	-	-	-	-	-	850-852	854	-	-
Nickel aluminide + Nickel (mon-)oxide + Aluminum oxide	5	-	-	-	-	-	-	-	-	-	-	-	856-858	860	-	-
Nickel borides																
Ni_2B	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni_3B	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni_3B_2	6-I	-	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel carbide (Ni_3C)	5	-	294	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel chrome spinel coating on niobium-zirconium alloys . . .	6-II	-	-	-	-	-	-	-	-		-	-	1387	-	-	-
Nickel chromite coating on niobium-zirconium alloy . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1387	-	-	-

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Nickel-chromium alloy coating on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1333	1335	-	-
Nickel ferride (Ni_3Fe)	6-I	-	-	-	-	-	-	-	-	-	304	-	-	-	-	-
Nickel ferrite ($NiO \cdot Fe_2O_3$) . . .	4-II	-	-	-	-	-	1087	1089	-	-	1091	-	-	-	-	-
Nickel ferrite spinal	4-II	-	-	-	-	-	-	1089	-	-	-	-	-	-	-	-
Nickel-lead silicate glass . . .	4-II	-	-	-	-	-	1773	-	-	-	-	-	-	-	-	-
Nickel-manganese intermetallics (Ni_3Mn)	6-I	-	-	-	-	-	652	654	-	-	-	-	-	-	-	-
Nickel (mon-) oxide (NiO) . . .	4-I	-	-	-	-	-	-	301	303	-	305	-	307-309	311	-	-
Nickel (mon-) oxide + Magnesium oxide	4-I	-	-	-	-	-	-	-	765	-	-	-	-	-	-	-
Nickel (mon-) oxide + Nickel aluminide	5	-	-	-	-	-	-	-	-	-	-	-	777-779	781	-	-
Nickel phosphides																
Ni_2P	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni_3P	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
$Ni_{12}P_5$	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel selenides																
$NiSe_{1.0-2.05}$	6-I	345	-	-	-	-	-	347	-	-	-	-	-	-	-	-
Nickel silicides																
NiSi	6-I	-	453	-	-	-	-	-	-	-	-	-	-	-	-	-
$NiSi_2$	6-I	-	453	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni_2Si	6-I	-	453	-	-	-	-	-	-	-	455	-	-	-	-	-
Ni_3Si	6-I	-	453	-	-	-	-	-	-	-	455	-	-	-	-	-
Ni_3Si_2	6-I	-	453	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel-tantalum intermetallics (Ni_3Ta)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel tellurides																
NiTe	6-I	-	-	-	-	-	-	604	-	-	-	-	-	-	-	-
$NiTe_{1.1-1.5}$	6-I	-	-	-	-	-	-	604	-	-	-	-	-	-	-	-
$NiTe_2$	6-I	-	-	-	-	-	-	604	-	-	-	-	-	-	-	-
Nickel titanate ($NiO \cdot TiO_2$) . . .	4-II	-	-	-	-	-	1452	-	-	-	-	-	-	-	-	-
Nickel zinc ferrite ($Ni_xZn_{1-x}O \cdot Fe_2O_3$).	4-II	-	-	-	-	-	-	1093	1095	-	-	-	-	-	-	-
Nickel-zirconium intermetallics																
NiZr	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni_3Zr	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Ni_4Zr	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Nimonic 75	2-II	-	-	-	-	-	-	-	1144	-	-	-	1182	-	-	-
Nimonic 80	2-II	-	-	-	-	-	-	-	1140	-	-	-	-	-	-	-
Nimonic 80/80A	2-II	-	-	-	-	-	-	-	1140	-	-	-	-	-	-	-
Nimonic 90	2-II	-	-	-	-	-	-	-	1136	-	-	-	-	-	-	-
Nimonic 95	2-II	-	-	-	-	-	-	-	1136	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Nimonic 100	2-II	1219	1217	-	-	-	-	-	1223	-	1227	-	-	-	-	-
Nimonic 105	2-II	-	-	-	-	-	-	-	1223	-	-	-	-	-	-	-
Niobium (Nb)	1	722	722	-	-	-	724	726	728	730	732	-	734-438	740	-	742
Niobium coated with aluminide .	6-II	-	-	-	-	-	-	-	-	-	-	-	1435-1437	1439	-	-
Niobium coated with niobium aluminide	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1459	-	-
Niobium + ΣX_i	2-II	-	-	-	-	-	-	1361	-	-	-	-	-	-	-	-
Niobium + Iron + ΣX_i	2-II	-	-	-	-	-	-	1317	-	-	-	-	-	-	-	-
Niobium + Molybdenum + ΣX_i . .	2-II	1319	-	-	-	-	-	1321	1323	1325	1327	-	-	-	-	-
Niobium + Tantalum	2-I	-	361	-	-	-	363	-	365	-	-	-	-	-	-	-
Niobium + Tantalum + ΣX_i . . .	2-II	-	-	-	-	-	-	1329	1331	1333	1335	-	-	-	-	-
Niobium + Titanium	2-I	-	-	-	-	-	367	-	-	-	-	-	-	-	-	-
Niobium + Titanium + ΣX_i . . .	2-II	1337	-	-	-	-	-	1339	1341	1343	1345	-	1347	-	-	-
Niobium + Tungsten	2-I	-	-	-	-	-	-	-	-	-	-	-	369-371	-	-	-
Niobium + Tungsten + ΣX_i . . .	2-II	-	-	-	-	-	-	1349	1351	1353	1355	-	-	-	-	-
Niobium + Uranium	2-I	-	-	-	-	-	-	-	373	-	375	-	-	-	-	-
Niobium + Vanadium.	2-I	-	-	-	-	-	377	-	-	-	-	-	-	-	-	-
Niobium + Vanadium + ΣX_i . . .	2-II	-	-	-	-	-	-	-	1357	-	1359	-	-	-	-	-
Niobium + Zirconium	2-I	-	-	-	-	-	379	381	383	-	385	-	387-389	-	-	-
Niobium alloys (special design.)																
5 Mo - 5 V - Zr	2-II	-	-	-	-	-	-	1321	-	1325	-	-	-	-	-	-
27 Ta - 12 W - 0.5 Zr	2-II	-	-	-	-	-	-	1329	-	1333	-	-	-	-	-	-
10 Ti - 5 Zr	2-II	-	-	-	-	-	-	1339	-	1348	-	-	-	-	-	-
10 W - 1 Zr - 0.1 C	2-II	-	-	-	-	-	-	1349	-	1353	-	-	-	-	-	-
10 W - 5 Zr	2-II	-	-	-	-	-	-	1349	-	1353	-	-	-	-	-	-
15 W - 5 Mo - 1 Zr	2-II	-	-	-	-	-	-	1349	-	-	-	-	-	-	-	-
15 W - 5 Mo - 1 Zr - 0.5 C . .	2-II	-	-	-	-	-	-	-	-	1353	-	-	-	-	-	-
B-66	2-II	-	-	-	-	-	-	-	-	-	1327, 1359	-	-	-	-	-
Cb-752	2-II	-	-	-	-	-	-	1349	-	-	1355	-	-	-	-	-
F-48	2-II	-	-	-	-	-	-	1349	-	-	1355	-	-	-	-	-
Ferroniobium	2-II	-	-	-	-	-	-	1317	-	-	-	-	-	-	-	-
FS-82	2-II	-	-	-	-	-	-	-	-	-	1335	-	-	-	-	-
FS-82B	2-II	-	-	-	-	-	-	1329	-	-	1335	-	-	-	-	-
FS-85	2-II	-	-	-	-	-	-	-	-	-	1335	-	-	-	-	-
MAR-M200	2-II	-	-	-	-	-	-	-	-	-	1305	-	-	-	-	-
Niobium aluminide ($NbAl_3$) . . .	6-I	-	21	-	-	-	-	-	-	-	-	-	-	23	-	-
Niobium aluminide coating on niobium	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1459	-	-

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Niobium beryllides																
$NbBe_{11}$	6-I	-	108	-	-	-	-	-	-	-	-	-	-	-	-	-
$NbBe_{12}$	6-I	-	108	-	-	-	-	110	112	-	114	-	116	120	-	-
Nb_2Be_{17}	6-I	-	-	-	-	-	-	-	112	-	-	-	116-118	120	-	-
Niobium borides																
NbB	6-I	-	194	-	-	-	-	-	-	-	-	-	-	-	-	-
NbB_2	6-I	194	194	-	-	-	-	196	-	-	198	-	200-202	-	-	-
Nb_3B_2	6-I	-	194	-	-	-	-	-	-	-	-	-	-	-	-	-
Nb_3B_4	6-I	-	194	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium (di-)boride + Zirconium (di-)boride	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium carbide (NbC).	5	91	91	-	-	-	93	95-97	99	-	101	-	104-106	-	-	-
Niobium-chromium intermetallics ($NbCr_2$)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium-cobalt intermetallics ($NbCo_2$)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium ferride ($NbFe_2$)	6-I	-	306	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium germanides																
$NbGe_2$	6-I	323	323	-	-	-	-	-	327	-	-	-	-	-	-	-
Nb_2Ge	6-I	-	323	-	-	-	-	-	-	-	-	-	-	-	-	-
Nb_3Ge	6-I	323	323	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium germanide silicides ($NbGe_xSi_{1-x}$)	6-I	-	-	-	-	-	-	-	529	-	-	-	-	-	-	-
Niobium-manganese intermetallics ($NbMn_2$)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium nitrides																
NbN	5	535	535	-	-	-	537	-	-	-	539	-	-	-	-	-
Nb_2N	5	-	535	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium oxides																
NbO	4-I	-	-	-	-	-	-	315	-	-	-	-	-	-	-	-
NbO_2	4-I	-	-	-	-	-	-	317	-	-	-	-	-	-	-	-
Nb_2O_5	4-I	313	-	313	-	-	-	319	-	-	321	-	-	-	-	-
Niobium (pent-)oxide + + Aluminum oxide	4-I	-	767	-	-	-	-	-	-	-	769	-	-	-	-	-
Niobium (pent-)oxide + + Beryllium oxide	4-I	-	771	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium (pent-)oxide + + Magnesium oxide	4-I	-	773	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium (pent-)oxide + + Titanium (di-)oxide	4-I	-	775	-	-	-	-	-	-	-	777	-	-	-	-	-
Niobium (pent-)oxide + + Zirconium (di-)oxide. . . .	4-I	-	779	-	-	-	-	-	-	-	781	-	-	-	-	-
Niobium phosphide (NbP) . . .	5	637	336	-	-	-	639	-	-	-	-	-	-	-	-	-
Niobium selenide ($NbSe_2$) . . .	6-I	-	-	-	-	-	367	-	369	-	-	-	-	-	-	-

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Niobium silicides																
$NbSi_2$	6-I	-	-	-	-	-	527	-	529	-	-	-	-	-	-	-
Nb_4Si	6-I	-	457	-	-	-	-	-	-	-	-	-	-	-	-	-
Nb_5Si.	6-I	-	457	-	-	-	-	-	-	-	459	-	-	-	-	-
(Penta-) niobium (tri-) silicide + + (Di-) molybdenum boride . .	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium silicide germanides																
NbSiGe	6-I	-	-	-	-	-	317	-	319	-	-	-	-	-	-	-
$NbSi_{1-x}Ge_x$	6-I	-	-	-	-	-	317	-	319	-	-	-	-	-	-	-
Niobium stannide (Nb_3Sn) . . .	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Niobium telluride ($NbTe_2$) . . .	6-I	-	-	-	-	-	606	-	608	-	-	-	-	-	-	-
Niobium-zirconium alloy coated with barium titanate	6-II	-	-	-	-	-	-	-	-	-	-	-	1369	-	-	-
Niobium-zirconium alloy coated with boron	6-II	-	-	-	-	-	-	-	-	-	-	-	1291	-	-	-
Niobium-zirconium alloy coated with calcium titanate	6-II	-	-	-	-	-	-	-	-	-	-	-	1371	-	-	-
Niobium-zirconium alloy coated with iron titanate	6-II	-	-	-	-	-	-	-	-	-	-	-	1385	-	-	-
Niobium-zirconium alloy coated with nickel chromite	6-II	-	-	-	-	-	-	-	-	-	-	-	1387	-	-	-
Niobium-zirconium alloys coated with silicon carbide	6-II	-	-	-	-	-	-	-	-	-	-	-	14[illegible]5	-	-	-
Nodular cast iron	3	-	-	-	-	-	-	-	35-37, 437	-	41, 444	-	-	-	-	-
Nodular cast iron, ferritic base .	3	-	-	-	-	-	-	-	37	-	-	-	-	-	-	-
Nodular cast iron, pearlitic base	3	-	-	-	-	-	-	-	35	-	41	-	-	-	-	-
Nycar PA-21	6-II	1051	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nylon	6-II	-	-	-	-	-	-	1047	-	-	1049	-	-	-	-	-
Nylon 1 N fabrics	6-II	-	-	-	-	-	-	-	-	1273	-	-	-	-	-	-
Nylon 6	6-II	-	-	-	-	-	-	1047	-	-	1049	-	-	-	-	-
Nylon 9	6-II	-	-	-	-	-	-	-	-	-	1049	-	-	-	-	-
Nylon 11	6-II	-	-	-	-	-	-	-	-	-	1049	-	-	-	-	-
Nylon 11 N fabric	6-II	-	-	-	-	-	-	-	-	1273	-	-	-	-	-	-
Nylon 66	6-II	-	-	-	-	-	-	-	-	-	1049	-	-	-	-	-
Nylon fabric	6-II	-	-	-	-	-	-	-	-	1273	-	-	-	-	-	-
Nylon FM-1	6-II	-	-	-	-	-	-	-	-	-	1049	-	-	-	-	-

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O																
OFHC copper	1	-	-	-	-	-	-	-	458	460	-	-	-	-	-	-
Opalon 300 FM	6-II	-	1076	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic fiber cloth	6-II	-	-	-	-	-	-	-	-	-	1275	-	-	-	-	-
Osmium (Os)	1	744	744	-	-	-	746	-	748	-	-	-	750	-	-	-
P																
Palatinol AH	6-II	-	-	-	-	-	-	-	1086	-	-	-	-	-	-	-
Palladium (Pd)	1	752	752	-	-	-	754	756	758	-	-	760	762-764	766	-	-
Palladium + Cobalt + ΣX_i . . .	2-II	-	1363	-	-	-	1366-1368	-	-	-	-	-	-	-	-	-
Palladium + Copper + ΣX_i . . .	2-II	-	1370	-	-	-	-	1372	-	-	-	-	-	-	-	-
Palladium + Gold + ΣX_i	2-II	-	1374	-	-	-	1376	-	-	-	-	-	-	-	-	-
Palladium + Nickel	2-I	-	-	-	-	-	391	-	-	-	-	-	-	-	-	-
Palladium + Nickel + ΣX_i . . .	2-II	-	-	-	-	-	-	-	-	-	1378	-	-	-	-	-
Palladium + Uranium	2-I	-	393	-	-	-	-	-	-	-	-	-	-	-	-	-
Palladium aluminides																
PdAl	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Pd_2Al	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Palladium beryllides																
PdBe	6-I	-	158	-	-	-	-	-	-	-	-	-	-	-	-	-
$PdBe_{12}$	6-I	-	158	-	-	-	-	-	-	-	-	-	-	-	-	-
Palladium brazing alloy GE-76 .	2-II	-	-	-	-	-	-	-	-	-	1378	-	-	-	-	-
Palladium tellurides																
PdTe	6-I	-	-	-	-	-	-	610	-	-	-	-	-	-	-	-
$PdTe_2$	6-I	-	-	-	-	-	-	610	-	-	-	-	-	-	-	-
Panelyte, grade 942	6-II	-	-	-	-	-	-	-	-	-	1107	-	-	-	-	-
Paraplex P43	6-II	-	-	-	-	-	-	-	-	-	978	-	-	-	-	-
Penton 1215	6-II	-	1076	-	-	-	-	-	-	-	-	-	-	-	-	-
Perbunan 18	6-II	-	-	-	-	-	-	-	-	1060	-	-	-	-	-	-
Perbunan 26	6-II	-	-	-	-	-	-	-	-	1060	-	-	-	-	-	-
Perbunan 35	6-II	-	-	-	-	-	-	-	-	1060	-	-	-	-	-	-
Periclase	4-I	-	-	-	-	-	-	-	254	-	-	-	-	-	-	-
Periclase, synthetic	4-I	-	-	-	-	-	-	-	254	-	-	-	-	-	-	-
Permanickel 300	2-II	1257	-	-	-	-	-	-	-	-	1303	-	-	-	-	-
Phenacite, synthetic	4-II	-	-	-	-	-	-	-	-	-	1223	-	-	-	-	-
Phenol formaldehyde	6-II	-	-	-	-	-	-	-	-	-	986	-	-	-	-	-
Phenol formaldehyde, asbestos filled	6-II	-	-	-	-	-	-	-	-	-	988	-	-	-	-	-
Phenol formaldehyde, ceramic filled	6-II	-	-	-	-	-	-	-	-	-	990	-	-	-	-	-
Phenol formaldehyde, cord filled	6-II	-	-	-	-	-	-	-	-	-	992	-	-	-	-	-

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Phenol formaldehyde, cotton flock filled	6-II	-	-	-	-	-	-	-	-	-	994	-	-	-	-	-
Phenol formaldehyde, fabric filled	6-II	-	-	-	-	-	-	-	-	-	996	-	-	-	-	-
Phenol formaldehyde, stupalith A-3412	6-II	-	-	-	-	-	-	-	-	-	990	-	-	-	-	-
Phenol formaldehyde, wood flour filled	6-II	-	-	-	-	-	-	-	-	-	998	-	-	-	-	-
Phenolic, alpha cellulose paper reinforced	6-II	-	-	-	-	-	-	-	-	-	1105	-	-	-	-	-
Phenolic, cotton fabric reinforced	6-II	-	-	-	-	-	-	-	-	-	1107	-	-	-	-	-
Phenolic, LMI 304 nylon reinforced	6-II	-	-	-	-	-	1103	-	-	-	-	-	-	-	-	-
Phenolic, long glass fiber reinforced	6-II	-	-	-	-	-	1103	-	-	-	-	-	-	-	-	-
Phenolic and epoxide copolymer resin, reinforced	6-II	-	-	-	-	-	-	-	-	-	1126	-	-	-	-	-
Phenolic novolak	6-II	-	-	-	-	-	982	-	-	-	-	-	-	-	-	-
Phenolic, reinforced	6-II	-	-	-	-	-	1103	-	-	-	1105-1107	-	-	-	-	-
Phenolic resin	6-II	980	-	-	-	-	982	-	984	1082	-	-	-	-	-	-
Phenolic resin, reinforced	6-II	1130	-	-	-	-	-	1132-1146	1148-1156	1159-1170	1172-1179	-	-	-	-	-
Phenolic resin, type 8	6-II	980	-	-	-	-	-	-	984	1082	-	-	-	-	-	-
Phenolites																
Phenolite	6-II	-	-	-	-	-	-	-	-	-	1101, 1176	-	-	-	-	-
NEMA C	6-II	-	-	-	-	-	-	-	-	-	1107	-	-	-	-	-
NEMA L	6-II	-	-	-	-	-	-	-	-	-	1107	-	-	-	-	-
NEMA LE	6-II	-	-	-	-	-	-	-	-	-	1107	-	-	-	-	-
NEMA X	6-II	-	-	-	-	-	-	-	-	-	1107	-	-	-	-	-
NEMA XP	6-II	-	-	-	-	-	-	-	-	-	1105	-	-	-	-	-
NEMA XXX	6-II	-	-	-	-	-	-	-	-	-	1105	-	-	-	-	-
NEMA XXXP	6-II	-	-	-	-	-	-	-	-	-	1105	-	-	-	-	-
XXXP	6-II	-	-	-	-	-	-	-	-	-	1105	-	-	-	-	-
Phenyl silane resin	6-II	-	-	-	-	-	-	1074	-	-	-	-	-	-	-	-
Phenyl silane resin, reinforced	6-II	-	-	-	-	-	-	1212	-	1220	-	-	-	-	-	-
Phenyl silane SC-1013 Monsanto	6-II	-	-	-	-	-	-	1074	-	-	-	-	-	-	-	-
Phosphate glass	4-II	1649	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (pent-)oxide + Zirconium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	787	-	-	-	-	-
Pittsburg no. 3235 glass	4-II	-	-	-	-	-	-	1697	-	-	-	-	1705	1709	1711-1713	-
Plate glass	4-II	1779	-	-	-	-	-	1791	1783	1793	1797	-	-	-	-	-
Plate glass no. 9330	4-II	-	-	-	-	-	-	1791	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Platinum (Pt)	1	768	768	-	-	-	770	772	774	776	778	780	782-788	790	-	-
Platinum coating on copper . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1313	-	-	-
Platinum coating on quartz . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1317	1319	-
Platinum coating on stainless steel	6-II	-	-	-	-	-	-	-	-	-	-	-	1315	-	-	-
Platinum + Copper	2-I	-	-	-	-	-	395-397	-	-	-	-	-	-	-	-	-
Platinum + Iron	2-I	-	-	-	-	-	399	-	-	-	401	-	-	-	-	-
Platinum + Rhodium	2-I	-	-	-	-	-	-	-	403	-	-	-	405	407	-	-
Platinum arsenide (Pt_2As_3) . . .	6-I	-	94	-	-	-	-	-	-	-	-	-	-	-	-	-
Platinum beryllide ($PtBe_{12}$) . .	6-I	158	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Platinum stannide (Pt_3Sn) . . .	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Platinum sulfides																
PtS	5	-	-	-	-	-	-	698	-	-	-	-	-	-	-	-
PtS_2	5	-	-	-	-	-	-	698	-	-	-	-	-	-	-	-
Platinum tellurides																
$PtTe$	6-I	-	-	-	-	-	-	612	-	-	-	-	-	-	-	-
$PtTe_2$	6-I	-	-	-	-	-	-	612	-	-	-	-	-	-	-	-
Plexiglas II	6-II	-	-	-	-	-	-	-	-	-	1026	-	-	-	-	-
Plexiglas AN-P-44A	6-II	1020	1020	-	-	-	-	1022	1024	-	1026	-	-	-	-	-
Plutonium (Pu)	1	794	792	-	792	-	796	799	-	-	801	-	-	-	-	-
Plutonium + Cerium + ΣX_i . . .	2-II	-	-	-	-	-	-	1380	-	-	-	-	-	-	-	-
Plutonium + Osmium	2-I	409	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium + Thorium	2-I	411	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium beryllide ($PuBe_{13}$) . .	6-I	158	158	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium bromide ($PuBr_3$). . .	5	3	3	3	3	3	-	-	-	-	-	-	-	-	-	5
Plutonium carbides																
PuC	5	-	-	-	-	-	110	112	-	-	114	-	-	-	-	-
Pu_2C_3	5	108	-	-	-	-	-	-	-	-	117	-	-	-	-	-
Plutonium chloride ($PuCl_3$) . . .	5	327	327	327	327	327	-	-	-	-	-	-	-	-	-	329
Plutonium ferrides																
$PuFe_2$	6-I	306	306	-	-	-	-	-	-	-	-	-	-	-	-	-
Pu_6Fe	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium fluoride (PuF_3) . . .	5	389	389	389	389	389	-	-	-	-	-	-	-	-	-	391
Plutonium iodide (PuI_3)	5	471	471	471	471	471	-	-	-	-	-	-	-	-	-	473
Plutonium-lead intermetallics ($PuPb_3$)	6-I	-	671	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium-manganese intermetallics ($PuMn_2$)	6-I	671	671	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium-nickel intermetallics																
$PuNi$	6-I	-	671	-	-	-	-	-	-	-	-	-	-	-	-	-
$PuNi_2$	6-I	-	671	-	-	-	-	-	-	-	-	-	-	-	-	-
$PuNi_5$	6-I	-	671	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Plutonium nitride (PuN)	5	-	-	-	-	-	-	-	-	-	541	-	-	-	-	-
Plutonium-osmium intermetallics ($PuOs_2$)	6-I	671	671	-	-	-	-	-	-	-	-	-	-	-	-	-
Plutonium oxides																
PuO	4-I	-	-	-	-	323	-	-	-	-	-	-	-	-	-	329
PuO_2	4-I	323	323	-	-	-	-	325	-	-	327	-	-	-	-	329
Plutonium silicide ($PuSi_2$) . . .	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polonium (Po)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	803
Polybutadiene	6-II	-	-	-	-	-	-	-	-	1066	-	-	-	-	-	-
Polychlorotrifluoroethylene . .	6-II	-	-	-	-	-	-	-	1037	-	1045	-	-	-	-	-
Polyester, glass fiber reinforced	6-II	-	-	-	-	-	-	-	-	-	1109	-	-	-	-	-
Polyester, unsaturated	6-II	-	-	-	-	-	-	-	-	-	968	-	-	-	-	-
Polyester resin, reinforced . .	6-II	1180	-	-	-	-	-	1191	1195-1198	1220	1200	-	-	-	-	-
Polyethylene	6-II	1030	-	-	-	-	-	-	1037	-	1045	-	-	-	-	-
Polyethylene, halogenated . . .	6-II	1030	-	-	-	-	-	-	-	-	1045	-	-	-	-	-
Polyethylene PE 575	6-II	-	1030	-	-	-	-	-	-	-	-	-	-	-	-	-
Polyfluorobutyl acrylate rubber .	6-II	1051	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polyisoprene	6-II	-	-	-	-	-	-	-	-	1066	-	-	-	-	-	-
Polymethyl methacrylate	6-II	-	-	-	-	-	-	-	-	-	1026	-	-	-	-	-
Polymethyl methacrylate, alumina filled	6-II	-	-	-	-	-	-	-	-	-	1028	-	-	-	-	-
Polymethyl methacrylate, boron phosphate filled	6-II	-	-	-	-	-	-	-	-	-	1028	-	-	-	-	-
Polymethyl methacrylate, calcium carbonate filled . . .	6-II	-	-	-	-	-	-	-	-	-	1028	-	-	-	-	-
Polymethyl methacrylate, silica filled	6-II	-	-	-	-	-	-	-	-	-	1028	-	-	-	-	-
Polymethyl methacrylate, zinc oxide filled	6-II	-	-	-	-	-	-	-	-	-	1028	-	-	-	-	-
Polypropylene	6-II	1076	1076	-	-	-	-	1078	1080	-	1088	-	-	-	-	-
Polystyrene	6-II	-	1076	-	-	-	-	-	1090	-	1092	-	-	-	-	-
Polystyrene, Grade 912A . . .	6-II	-	-	-	-	-	-	-	-	-	1092	-	-	-	-	-
Polystyrene foam	6-II	-	-	-	-	-	-	-	1090	-	-	-	-	-	-	-
Polytetrafluoroethylene	6-II	-	-	-	-	-	-	1035	1039	-	1045	-	-	-	-	-
Polytetrafluoroethylene laminate	6-II	-	-	-	-	-	-	1214	1218	1220	-	-	-	-	-	-
Polythene, germanium (di-)oxide filled	6-II	-	-	-	-	-	-	-	-	-	1041	-	-	-	-	-
Polythene, iron(ic) oxide filled .	6-II	-	-	-	-	-	-	-	-	-	1041	-	-	-	-	-
Polythene, scandium oxide filled	6-II	-	-	-	-	-	-	-	-	-	1041	-	-	-	-	-
Polythene PM-1	6-II	-	-	-	-	-	-	-	-	-	1045	-	-	-	-	-
Polyurethane foam	6-II	962	-	-	-	-	-	-	964	-	966	-	-	-	-	-
Polyvinyl carbazole	6-II	-	-	-	-	-	-	970	972	-	-	-	-	-	-	-
Polyvinyl chloride	6-II	-	1076	-	-	-	-	-	1086	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Polyvinyl chloride, cellular	6-II	-	-	-	-	-	-	-	1086	-	-	-	-	-	-	-
Porcelain	5	1003	-	-	-	-	1005-1013	1015	1017	-	1019-1021	-	-	-	-	-
Porcelain 7A2	5	-	-	-	-	-	-	-	1017	-	-	-	-	-	-	-
Porcelain 576	5	1003	-	-	-	-	-	-	1017	-	-	-	-	-	-	-
Porcelain, aluminum oxide	5	1003	-	-	-	-	-	1015	1017	-	-	-	-	-	-	-
Porcelain, cone 14	5	-	-	-	-	-	1007	-	-	-	-	-	-	-	-	-
Porcelains, electrical																
K-3 body	5	-	-	-	-	-	1005	-	-	-	-	-	-	-	-	-
K-5 body	5	-	-	-	-	-	1005	-	-	-	-	-	-	-	-	-
K-6 body	5	-	-	-	-	-	1005	-	-	-	-	-	-	-	-	-
K-7 body	5	-	-	-	-	-	1005	-	-	-	-	-	-	-	-	-
K-8 body	5	-	-	-	-	-	1005	-	-	-	-	-	-	-	-	-
K-9 body	5	-	-	-	-	-	1005	-	-	-	-	-	-	-	-	-
Li-K-1 body	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Li-K-2a body	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Li-K-2b body	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Li-K-2c body	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Li-K-2d body	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Li-K-2e body	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Lithium modified	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Pelalite body	5	-	-	-	-	-	1011	-	-	-	-	-	-	-	-	-
Porcelain, feldspar, dinnerware cone 12-14	5	-	-	-	-	-	1007	-	-	-	-	-	-	-	-	-
Porcelain, zircon	5	1003	-	-	-	-	1013	-	1017	-	1021	-	-	-	-	-
Potassium aluminum silicates	4-II	-	-	-	-	-	-	-	-	-	1316-1318	-	-	-	-	-
Potassium aluminum silicate + Iron(ic) oxide	4-II	-	-	-	-	-	-	1573	-	-	-	-	-	-	-	-
Potassium borate glass	4-II	1605	-	-	-	-	1607	-	-	-	-	-	-	-	-	-
Potassium bromide (KBr)	5	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-
Potassium chloride (KCl)	5	-	-	-	-	-	-	-	-	-	-	-	-	331	-	-
Potassium feldspar	4-II	-	-	-	-	-	-	-	-	-	1316-1318	-	-	-	-	-
Potassium fluoride + Lithium fluoride	5	-	-	-	-	-	-	409	-	-	-	-	-	-	-	-
Potassium mica	5	-	-	-	-	-	-	-	-	-	1001	-	-	-	-	-
Potassium sodium aluminum silicates	4-II	-	-	-	-	-	-	-	-	-	1320	-	-	-	-	-
Potassium uranate ($K_2O \cdot UO_3$)	4-II	-	1482	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium lead silicate glass	4-II	-	-	-	-	-	1777	-	-	-	-	-	-	-	-	-
Potassium silicate glass	4-II	-	-	-	-	-	-	-	-	-	1775	-	-	-	-	-
Praseodymium (Pr)	1	805	805	805	805	-	807	809	-	-	-	-	-	-	-	811
Praseodymium + ΣX_i	2-II	-	1382	-	-	-	-	-	-	-	-	-	-	-	-	-

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Praseodymium + Magnesium . .	2-I	413	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium + Neodymium . .	2-I	-	-	-	-	-	-	-		-	415	-	-	-	-	-
Praseodymium + Silicon	2-I	-	-	-	-	-	-	417	-	-	-	-	-	-	-	-
Praseodymium aluminides																
$PrAl$	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrAl_2$	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrAl_4$	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_3Al_2	6-I	-	43	-	-	-	-	-	-	-	-	-		-	-	-
Praseodymium-bismuth intermetallics (PrBi)	5-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium borides																
PrB_4	6-I	296	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PrB_6	6-I	295-296	-	-	-	-	300	-	-	-	-	-	-	-	-	-
Praseodymium bromide ($PrBr_3$)	5	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-cadmium intermetallics																
$PrCd$	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrCd_2$	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrCd_3$	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrCd_{11}$	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium carbides																
PrC_2	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium chloride ($PrCl_3$).	5	339	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-cobalt intermetallics																
$PrCo_2$	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrCo_5$	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-copper intermetallics																
$PrCu$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrCu_2$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrCu_4$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrCu_6$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-gallium intermetallics ($PrGa_2$)	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium germanides																
$PrGe$	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrGe_2$	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-gold intermetallics																
$PrAu$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrAu_2$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-

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Praseodymium-gold intermetallics (cont.)																
$PrAu_3$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2Au	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium hydride (PrH_2) .	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-indium intermetallics																
$PrIn_3$	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_3In	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-lead intermetallics																
PrPb	6-I	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrPb_3$	6-I	673	674	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2Pb	6-I	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-magnesium intermetallics																
PrMg	6-I	673	674	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrMg_3$	6-I	673	674	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrMg_9$	6-I	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_4Mg	6-I	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-mercury intermetallics (PrHg)	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-nickel intermetallics ($PrNi_5$)	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-osmium intermetallics ($PrOs_2$)	6-I	673	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium oxides																
$PrO_{1.70-1.83}$	4-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	335
Pr_6O_{11}	4-I	-	-	-	-	-	-	331	-	-	333	-	-	-	-	-
Praseodymium phosphide (PrP).	5	635	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium selenides																
PrSe	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2Se_3	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_3Se_4	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium silicides ($PrSi_2$).	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-silver intermetallics																
PrAg	6-I	673	673	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrAg_2$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrAg_3$	6-I	-	673	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium stannides																
$PrSn_3$	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2Sn	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2Sn_3	6-I	-	541	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Praseodymium sulfides																
PrS	5	700	-	-	-	-	-	-	-	-	702	-	-	-	-	-
PrS_2	5	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2S_3	5	700	-	-	-	-	-	-	-	-	702	-	-	-	-	-
Pr_3S_4	5	700	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Praseodymium-thallium intermetallics																
PrTl	6-I	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-
$PrTl_3$	6-I	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-
Pr_2Tl	6-I	-	674	-	-	-	-	-	-	-	-	-	-	-	-	-
Promethium (Pm)	1	-	813	813	-	813	-	-	-	-	-	-	-	-	-	-
Protactinium (Pa)	1	815	815	-	-	-	-	-	-	-	-	-	-	-	-	-
Protactinium oxide (PaO) . . .	4-I	337	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Protoenstatite	4-II	-	-	-	-	-	-	-	-	-	1295	-	-	-	-	-
Pu-Ce-Co eutectic alloy	2-II	-	-	-	-	-	-	1380	-	-	-	-	-	-	-	-
Pyrex 774	4-II	1693	-	-	-	-	-	-	1699	1701	1703	-	1707	1709	1713	-
Pyrex 7740	4-II	-	-	-	-	-	-	1697	-	1701	-	-	1705	1709	1711-1713	-
Pyrex glasses	4-II	1693	-	-	-	-	-	1697	1699	1701	1703	-	1705-1707	1709	1711-1713	-
Pyrocerams																
Pyroceram 9606	4-II	-	-	-	-	-	-	1587	1589	1591	-	-	1593-1599	1601	1603	-
Pyroceram 9608	4-II	-	-	-	-	-	-	1587	1589	1591	-	-	1593-1599	1601	1603	-
Pyroceram 9690	4-II	-	-	-	-	-	-	-	-	1591	-	-	-	-	-	-
Pyrolytic carbon	1	83	-	-	-	-	-	-	89	-	-	-	-	-	-	-
Pyrolytic carbon EYX-4 . . .	1	-	-	-	-	-	-	-	89	-	-	-	-	-	-	-
Pyrolytic graphite	1	-	-	-	-	-	-	-	317	-	319	-	325-331	333-335	-	-
Pyrolytic graphite coating on tantalum	6-II	-	-	-	-	-	-	-	-	-	-	-	1297-1299	-	-	-
Pyrolytic graphite + Zirconium (pyro-) carbide	5	-	-	-	-	-	-	-	-	-	745	-	-	-	-	-
Q																
Quartz	4-I	353	353	-	-	-	355	357	361	365	-	-	-	379	381	-
Quartz coated with magnesium fluoride	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1425	1427	-
Quartz coated with platinum . .	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1317	1319	-
Quartz glass	4-II	1651	-	-	-	-	1653	1655	1657	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
R																
Rene 41	2-II	1122	-	-	-	-	-	1130	1134	-	1156	-	1184, 1199	1211	-	-
Resimene 814 resin	6-II	-	1014	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhenium (Re)	1	817	817	-	-	817	820	822	824	-	826	-	828-832	-	-	834
Rhenium + Tungsten	2-I	-	419	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhenium arsenide (Re_3As_7) . . .	6-I	-	-	-	-		96	-	-	-	-	-	-	-	-	-
Rhenium phosphide (ReP) . . .	5	-	635	-	-	-	-	-	-	-	-	-	-	-	-	-
Rhenium selenide ($ReSe_2$) . . .	6-I	-	-	-	-	-	349	-	351	-	-	-	-	-	-	-
Rhenium silicides																
ReSi	6-I	-	461	-	-	-	-	-	-	-	463	-	-	-	-	465
$ReSi_2$	6-I	-	461	-	-	-	-	-	-	-	463	-	-	-	-	465
Re_3Si	6-I	-	461	-	-	-	-	-	-	-	-	-	-	-	-	465
Rhodium (Rh)	1	836	836	-	-	-	838	840	842	-	-	-	844-848	850	-	-
Rhodium germanides																
RhGe	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rh_2Ge	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rh_3Ge_4	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rh_5Ge_3	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rokide A coating on AISI 446 . .	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1351	-	-
Rokide C coating on titanium alloy 6 Al - 4 V	6-II	-	-	-	-	-	-		-	-	-	-	1345-1347	-	-	-
Rubbers																
Board no. 2266, cellular . .	6-II	-	-	-	-	-	-	-	1056	-	-	-	-	-	-	-
Buna	6-II	1051	-	-	-	-	-	1054	1056	1066	-	-	-	-	-	-
Dielectric mix	6-II	-	-	-	-	-	-	-	1056	-	-	-	-	-	-	-
Natural	6-II	1051	-	-	-	-	-	-	1056	1058	1068	-	-	-	-	-
Perbunan	6-II	1051	-	-	-	-	-	1054	1056	1060	-	-	-	-	-	-
Silicone	6-II	-	-	-	-	-	-	-	-	1064	1068	-	-	-	-	-
Synthetic	6-II	1051	-	-	-	-	-	1054	1056	1060-1066	1068	-	-	-	-	-
Rubidium fluoride (RbF)	5	-	-	-	-	-	-	393	-	-	-	-	-	-	-	395
Ruthenium (Ru)	1	852	852	-	-	852	854	856	858	-	-	-	-	-	-	860
Ruthenium-tungsten intermetallics (Ru_2W_3)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Rutile	4-I	445	-	-	-	-	450	454	460	-	462	-	-	-	-	-

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S																
SAE 1006	3	-	-	-	-	-	-	-	-	329	-	-	-	-	-	-
SAE 1010	3	310	-	-	-	-	312	316	325	329	335	-	-	-	-	-
SAE 1018	3	-	-	-	-	-	-	-	-	333	-	-	-	-	-	-
SAE 1020	3	-	-	-	-	-	-	-	-	329	-	-	345-347	-	-	-
SAE 1045	3	-	-	-	-	-	-	-	-	333	-	-	-	-	-	-
SAE 3140	3	-	-	-	-	-	-	-	-	365	-	-	-	-	-	-
SAE 4130	3	-	-	-	-	-	-	-	-	85	-	-	-	-	-	-
SAE 4340	3	-	-	-	-	-	-	-	387	395	-	-	-	-	-	-
SAE 8630	3	-	-	-	-	-	-	-	-	-	337	-	-	-	-	-
Samaria	4-I	339	339	-	-	-	-	341	-	-	343	-	345	-	-	-
Samarium (Sm)	1	862	862	862	862	862	864	866	-	-	-	-	-	-	-	-
Samarium-bismuth intermetallics ($SmBi$)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium borides																
SmB_4	6-I	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SmB_6	6-I	295	296	-	-	-	300	-	-	-	302	-	-	-	-	-
Samarium-cadmium intermetallics																
$SmCd$	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$SmCd_2$	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$SmCd_{11}$	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium carbides																
SmC_2	5	294	294	-	-	-	-	-	-	-	-	-	-	-	-	-
Sm_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium-cobalt intermetallics																
$SmCo_2$	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$SmCo_5$	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium ferrides																
$SmFe_2$	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$SmFe_3$	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium-gallium intermetallics ($SmGa_2$)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium germanide ($SmGe_2$) .	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium hydrides																
SmH_2	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SmH_3	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium-indium intermetallics ($SmIn_3$)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium-lead intermetallics ($SmPb_3$)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium-mercury intermetallics ($SmHg$)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Samarium-nickel intermetallics																
$SmNi_2$	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$SmNi_5$	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium (sesqui-) oxide (Sm_2O_3)	4-I	339	339	-	-	-	-	341	-	-	343	-	345	-	-	-
Samarium (sesqui-) oxide + + Gadolinium oxide	4-I	-	-	-	-	-	-	-	783	-	-	-	-	-	-	-
Samarium (sesqui-) oxide + + Gadolinium oxide + + Dysprosium oxide + Yttrium oxide	4-I	785	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium phosphide (SmP)	5	635	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium selenides (SmSe)	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium silicides ($SmSi_2$)	6-I	523	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Samarium sulfides																
$SmS_{0.75}$	5	-	-	-	-	-	706	-	-	-	-	-	-	-	-	-
SmS	5	704	704	-	-	-	-	-	708	-	-	-	-	-	-	-
SmS_2	5	-	704	-	-	-	-	-	-	-	-	-	-	-	-	-
Sm_2S_3	5	704	704	-	-	-	-	-	-	-	-	-	-	-	-	-
Sm_3S_4	5	704	704	-	-	-	-	-	-	-	-	-	-	-	-	-
Sandwich panels, TAC-polyester skin and alkyd isocyanate foam core	6-II	-	-	-	-	-	-	1257	1259	-	-	-	-	-	-	-
Sapphire	4-I	41	41	-	-	-	43	8	45	-	47	-	-	-	-	-
Sapphire, synthetic	4-I	41	-	-	-	-	-	8	45	-	47	-	-	-	-	-
Scandia	4-I	347	347	-	-	-	-	349	-	-	351	-	-	-	-	-
Scandium (Sc)	1	868	868	868	868	868	870	872	-	-	874	-	-	-	-	876
Scandium boride (ScB_2)	6-I	204	204	-	-	-	-	-	-	-	206	-	-	-	-	-
Scandium carbide (ScC)	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scandium nitride (ScN)	5	621	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scandium oxide (Sc_2O_3)	4-I	347	347	-	-	-	-	349	-	-	351	-	-	-	-	-
Scandium selenide (Sc_2Se_3)	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scandium sulfide (Sc_2S_3)	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Scandium telluride (Sc_2Te_3)	6-I	636	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selectron 400	6-II	1020	-	-	-	-	-	-	-	-	1026	-	-	-	-	-
Selectron 5026	6-II	-	-	-	-	-	-	-	-	-	968	-	-	-	-	-
Si 142 silicon	1	-	-	-	-	-	-	-	-	890	-	-	-	-	-	-
Silastic 160	6-II	-	-	-	-	-	-	-	-	1064	1068	-	-	-	-	-
Silastic 180	6-II	-	-	-	-	-	-	-	-	1064	-	-	-	-	-	-
Silica	4-I	353	353	-	-	-	355	357	359	363	367	-	373-375	377	-	-
Silica fabric	6-II	-	-	-	-	-	-	-	-	1277	-	-	-	-	-	-
Silica glass	4-II	1651	1651	-	-	-	1653	1655	1657	1659-1661	1663	-	1665-1667	1669	1671-1673	-
Silica rock	4-I	820, 826	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Silicide coating on molybdenum .	6-II	-	-	-	-	-	-	-	-	-	-	-	1467-1469	1471	-	-
Silicide coating on tantalum. . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1473-1475	1477	-	-
Silicide coating on titanium . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1479-1481	1483	-	-
Silicide coating on tungsten . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1485-1487	1489	-	-
Silicon (Si)	1	878	878	878	-	878	880-884	886	888	890	892	-	894-896	898	-	-
Silicon + ΣX_i	2-II	-	-	-	-	-	1384	1386	-	-	-	-	-	-	-	-
Silicon + Germanium	2-I	421	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silicon + Iron	2-I	-	-	-	-	-	-	423	425	-	427	-	-	-	-	-
Silicon alloys (special designations)																
Leboite	2-I	-	-	-	-	-	-	-	-	-	427	-	-	-	-	-
Silicon borides																
SiB_4	6-I	-	-	-	-	-	-	-	-	-	210	-	-	-	-	-
SiB_6	6-I	-	208	-	-	-	-	-	-	-	210	-	-	-	-	-
Silicon carbides																
(SiC)	5	119	119	-	-	-	121	123	125-127	-	129	-	131-135	137-139	-	-
Norton RC-4237	5	-	-	-	-	-	-	-	-	-	-	-	311	-	-	-
Silicon carbide coating on niobium-zirconium alloys . . .	6-II	-	-	-	-	-	-	-	-	-	-	-	1415	-	-	-
Silicon carbide coating on tantalum	6-II	-	-	-	-	-	-	-	-	-	-	-	1411-1413	-	-	-
Silicon carbide + Boron carbide .	5	297	-	-	-	-	-	-	-	-	299	-	-	-	-	-
Silicon carbide + Carbon	5	-	-	-	-	-	-	807	-	-	809	-	811	-	-	-
Silicon carbide + Graphite . . .	5	-	-	-	-	-	-	813	-	-	-	-	-	-	-	-
Silicon carbide + Graphite + Silicon	5	-	-	-	-	-	-	815	817	-	-	-	-	-	-	-
Silicon carbide + Magnesium oxide + Nickel aluminide cermet	6-II	-	-	-	-	-	-	-	-	-	854	-	-	-	-	-
Silicon carbide + Silicon	5	-	-	-	-	-	-	819	-	-	-	-	821	-	-	-
Silicon carbide + Silicon cermet .	6-II	-	-	-	-	-	-	-	856	-	-	-	-	-	-	-
Silicon carbide + Silicon nitride .	5	-	-	-	-	-	-	-	-	-	823	-	-	-	-	-
Silicon carbide + (Tetr-) boron carbide	5	297	-	-	-	-	-	-	-	-	299	-	-	-	-	-
Silicon carbide + ΣX_i	5	-	-	-	-	-	-	-	307	-	-	-	309-311	-	-	-
Silicon carbide foam	5	-	-	-	-	-	-	-	127	-	129	-	-	-	-	-
Silicon germanide (SiGe)	6-I	-	-	-	-	-	-	405	-	-	-	-	-	-	-	-
Silicon oxides																
SiO	4-I	-	-	-	-	-	-	-	-	-	-	-	371	-	-	-

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Silicon oxides (cont.)																
SiO_2	4-I	353	353	-	-	-	355	357	359-361	363-365	367-369	-	373-375	377-379	381	-
Silicon (di-)oxide coating on aluminum	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1391	-	-
Silicon (di-)oxide foam	4-I	-	-	-	-	-	-	-	-	-	369	-	-	-	-	-
Silicon (mon-)oxide coating on aluminum	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1389	-	-
Silicon (di-)oxide + ΣX_i	4-I	826	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silicon (di-)oxide + Aluminum cermet	6-II	-	-	-	-	-	-	-	-	-	790	-	-	-	-	-
Silicon (di-)oxide + Aluminum oxide + Calcium oxide	4-I	-	-	-	-	-	-	-	-	796	-	-	-	-	-	-
Silicon (di-)oxide + Aluminum oxide	4-I	-	-	-	-	-	-	-	-	789	792	-	794	-	-	-
Silicon (di-)oxide + Aluminum oxide + Iron(ic) oxide	4-I	-	-	-	-	-	-	-	798	800	802-812	-	-	-	-	-
Silicon (di-)oxide + Aluminum oxide + Iron(ic) oxide + + Magnesium oxide + Potassium (mon-)oxide	4-I	-	-	-	-	-	-	-	814	-	-	-	-	-	-	-
Silicon (di-)oxide + Calcium oxide	4-I	-	-	-	-	-	-	-	816	818	-	-	-	-	-	-
Silicon (di-)oxide + Iron(ic) oxide	4-I	820	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silicon (di-)oxide + Molybdenum (di-)silicide	5	-	-	-	-	-	-	-	-	-	-	-	783-785	787	-	-
Silicon (di-)oxide + Titanium (di-)oxide	4-I	-		-	-	-	822	-	-	-	824	-	-	-	-	-
Silicon nitride (Si_3N_4)	5	543	543	-	-	-	-	545	547	-	549	-	551-553	555	-	-
Silicon nitride + Silicon carbide .	5	840	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silicon telluride (SiTe).	6-I	614	614	-	-	-	616	-	640	-	-	-	-	-	-	-
Silicone DC-301	6-II	-	-	-	-	-	1113	-	-	-	-	-	-	-	-	-
Silicone GMGA 5003	6-II	-	-	-	-	-	1070	-	-	-	-	-	-	-	-	-
Silicone coating on Inconel . . .	6-II	-	-	-	-	-	1495	-	-	-	-	-	-	-	-	-
Silicone, filled	6-II	-	-	-	-	-	1070	-	-	-	-	-	-	-	-	-
Silicone, reinforced.	6-II	-	-	-	-	-	1113	-	-	-	-	-	-	-	-	-
Silicone foams																
Silicone foam R-7001.	6-II	1084	-	-	-	-	-	-	1080	-	-	-	-	-	-	-
Silicone foam R-7002.	6-II	1084	-	-	-	-	-	1072	1080	-	-	-	-	-	-	-
Silicone foam R-7091.	6-II	1084	-	-	-	-	-	-	1080	-	-	-	-	-	-	-
Silicone resin	6-II	-	-	-	-	-	-	1072	-	-	-	-	-	-	-	-
Silicone resin, reinforced . . .	6-II	1204	-	-	-	-	-	1206	1208, 1213	1220	1210	-	-	-	-	-
Sillimanite	4-II	-	-	-	-	-	-	1189	-	-	1195	-	1199	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Silver (Ag)	1	900	900	900	900	900	902	904	906	-	908	910	912-914	916-920	-	922
Silver coated with silver sulfide	6-II	-	-	-	-	-	-	-	-	-	-	1433	1435	-	-	-
Silver coating on mylar	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1325	-	-
Silver lume	1	-	-	-	-	-	-	-	-	-	-	910	-	-	-	-
Silver + Aluminum	2-I	431	-	-	-	429	433	-	-	-	-	-	-	-	-	-
Silver + Cadmium	2-I	-	-	-	-	-	-	-	435	-	-	-	-	437	-	439
Silver + Copper	2-I	-	-	-	-	-	-	-	-	-	441	-	-	-	-	-
Silver + Gold	2-I	-	-	-	-	-	-	-	-	-	443	-	-	-	-	445
Silver + Lead	2-I	-	-	-	-	-	-	-	-	-	447	-	-	-	-	-
Silver + Magnesium	2-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	449
Silver + Manganese	2-I	-	-	-	-	-	451	-	-	-	-	-	-	-	-	-
Silver + Palladium	2-I	-	-	-	-	-	453	-	-	-	-	-	-	-	-	-
Silver + Platinum	2-I	-	-	-	-	-	455	-	-	-	-	-	-	-	-	-
Silver + Zinc	2-I	459	457	457	-	-	-	-	-	-	-	-	-	461	-	-
Silver antimony telluride ($AgSbTe_2$)	6-I	-	-	-	-	-	620	-	-	622	-	-	-	-	-	-
Silver antimony telluride + Germanium telluride	6-I	-	-	-	-	-	719	-	-	-	-	-	-	-	-	-
Silver antimony telluride + Tin telluride	6-I	-	-	-	-	-	-	-	721	-	-	-	-	-	-	-
Silver beryllide ($AgBe_{12}$)	6-I	158	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver bromide (AgBr)	5	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-
Silver indium telluride ($AgInTe_2$)	6-I	-	-	-	-	-	624	-	640	-	-	-	-	-	-	-
Silver oxide (Ag_2O)	4-I	-	-	-	-	-	-	383	-	-	-	-	-	-	-	-
Silver plated AISI 321	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1321	-	-
Silver selenide (Ag_2Se)	6-I	-	-	-	-	-	-	353	355	-	-	-	-	-	-	-
Silver sulfide (Ag_2S)	5	-	-	-	-	-	-	710	-	-	-	-	-	-	-	-
Silver sulfide coating on silver	6-II	-	-	-	-	-	-	-	-	-	-	1431	1433	-	-	-
Silver tellurides (Ag_2Te)	6-I	-	-	-	-	-	-	618	-	-	-	-	-	-	-	-
Soda lime glass	4-II	-	-	-	-	-	-	-	-	-	-	-	1809	1811	1813-1815	-
Soda lime aluminosilicate glass	4-II	-	-	-	-	-	1817	-	-	-	-	-	-	-	-	-
Soda-lime silicate glass	4-II	-	-	-	-	-	-	1791	1795	1793	1797	-	1799	1801	-	-
Soda lime glass LOF	4-II	-	-	-	-	-	-	-	-	-	-	-	1809	1811	1813-1815	-
Sodium aluminum borate glass	4-II	-	-	-	-	-	-	-	-	-	1627	-	-	-	-	-
Sodium aluminum silicates ($Na_2O\ Al_2O_3\ 4\ SiO_2$)	4-II	-	-	-	-	-	-	1324	-	-	1326	-	-	-	-	-
Sodium barium silicate glass	4-II	-	-	-	-	-	-	-	-	-	1789	-	-	-	-	-
Sodium beryllium borate glass	4-II	-	-	-	-	-	-	-	-	-	1629	-	-	-	-	-
Sodium borate glass	4-II	-	-	-	-	-	1607	-	-	-	-	-	-	-	-	-
Sodium borosilicate glass	4-II	-	-	-	-	-	-	-	-	-	1721	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Sodium calcium silicate ($Na_2O \cdot CaO \cdot SiO_2$)	4-II	-	-	-	-	-	-	1328	-	-	-	-	-	-	-	-
Sodium calcium silicate glass. .	4-II	-	-	-	-	-	-	1791	1795	1793	1797	-	1799	1801	-	-
Sodium ferrite ($Na_2O \cdot Fe_2O_3$) . .	4-II	-	-	-	-	-	-	1097	-	-	-	-	-	-	-	-
Sodium fluoride + Beryllium fluoride cermet	6-II	-	-	-	-	-	-	-	911	-	-	-	-	-	-	-
Sodium fluoride + Zirconium fluoride + Uranium (tetra-) fluoride	5	-	-	-	-	-	-	411	-	-	-	-	-	-	-	-
Sodium lead silicate glass . . .	4-II	-	-	-	-	-	1819	-	-	-	1803	-	-	-	-	-
Sodium magnesium borate glass.	4-II	-	-	-	-	-	-	-	-	-	1631	-	-	-	-	-
Sodium magnesium silicate glass	4-II	-	-	-	-	-	-	-	-	-	1805	-	-	-	-	-
Sodium magnesium copper silicate glass	4-II	-	-	-	-	-	-	-	-	-	1807	-	-	-	-	-
Sodium manganese telluride ($Na_xMn_{1-x}Te$)	6-I	-	-	-	-	-	626	-	628	-	-	-	-	-	-	-
Sodium molybdates																
$Na_2O \cdot MoO_3$	4-II	-	-	-	-	-	-	1119	-	-	-	-	-	-	-	-
$Na_2O \cdot 2\ MoO_3$	4-II	-	-	-	-	-	-	1119	-	-	-	-	-	-	-	-
Sodium (mon-)oxide (Na_2O) . .	4-I	-	-	-	-	-	-	385	-	-	-	-	-	-	-	-
Sodium phosphorus uranate ($2\ NaO \cdot UO_3 \cdot P_2O_5$).	4-II	-	1482	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium potassium aluminum silicates	4-II	-	-	-	-	-	-	-	-	-	1330	-	-	-	-	-
Sodium potassium borosilicate glass	4-II	-	-	-	-	-	-	-	-	-	1723	-	-	-	-	-
Sodium silicates																
$Na_2O \cdot SiO_2$	4-II	-	-	-	-	-	-	1322	-	-	-	-	-	-	-	-
$Na_2O \cdot 2\ SiO_2$	4-II	-	-	-	-	-	-	1322	-	-	-	-	-	-	-	-
Sodium silicate glass	4-II	1779	-	-	-	-	1781	-	1783	-	1785-1787	-	-	-	-	-
Sodium silicate glass no. 23 . .	4-II	-	-	-	-	-	-	1791	-	-	-	-	-	-	-	-
Sodium strontium alumino-silicate glass	4-II	-	-	-	-	-	-	-	-	-	1821	-	-	-	-	-
Sodium tellurate ($Na_2O \cdot TeO_3$) .	4-II	-	-	-	-	-	-	1366	-	-	-	-	-	-	-	-
Sodium titanates																
$Na_2O \cdot TiO_2$	4-II	-	-	-	-	-	-	1454	-	-	-	-	-	-	-	-
$Na_2O \cdot 2\ TiO_2$	4-II	-	-	-	-	-	-	1454	-	-	-	-	-	-	-	-
$Na_2O \cdot 3\ TiO_2$	4-II	-	-	-	-	-	-	1454	-	-	-	-	-	-	-	-
Sodium tungstates																
$Na_2O \cdot WO_3$	4-II	-	-	-	-	-	-	1480	-	-	-	-	-	-	-	-
$Na_2O \cdot 2\ WO_3$	4-II	-	-	-	-	-	-	1480	-	-	-	-	-	-	-	-
Sodium tungsten oxide (Na_xWO_3).	4-II	-	-	-	-	-	-	-	-	-	1155	-	-	-	-	-
Sodium uranate ($Na_2O \cdot UO_3$) . .	4-II	-	1482	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Sodium vanadates																
$Na_2O \cdot V_2O_5$	4-II	-	-	-	-	-	-	1494	-	-	-	-	-	-	-	-
$2\ Na_2O \cdot V_2O_5$	4-II	-	-	-	-	-	-	1494	-	-	-	-	-	-	-	-
$3\ Na_2O \cdot V_2O_5$	4-II	-	-	-	-	-	-	1494	-	-	-	-	-	-	-	-
Sodium zinc borosilicate glass .	4-II	-	-	-	-	-	-	-	-	-	1725	-	-	-	-	-
Solex 2808 plate glass	4-II	1779	-	-	-	-	-	1791	1783	1793	1797	-	-	-	-	-
Solex "S" plate glass.	4-II	1779	-	-	-	-	-	1791	1783	1793	1797	-	-	-	-	-
Spektralkohle artificial graphite.	1	-	-	-	-	-	-	-	360	-	-	-	-	-	-	-
Spinal, magnesium aluminate . .	4-II	1007	1007	-	-	-	1009	1011	1013	1015	1017	-	-	-	-	-
Spinal, magnesium aluminate, with sodium (mon-)oxide . . .	4-II	-	-	-	-	-	-	1524	1526	1528	1530	-	-	-	-	-
Spinal, magnesium chromite . .	4-II	-	-	-	-	-	-	-	-	-	1059	-	-	-	-	-
Spinal, nickel ferrite	4-II	-	-	-	-	-	-	1089	-	-	-	-	-	-	-	-
Spinal, zinc chromate	4-II	-	-	-	-	-	-	-	-	-	1063	-	-	-	-	-
Spodumene	4-II	-	-	-	-	-	-	-	1266	-	1270	-	-	-	-	-
Sponge zirconium	1	-	-	-	-	-	1102	-	1106	-	-	-	-	-	-	-
. . . . . .	2-I	-	-	-	-	-	699	-	-	-	-	-	-	-	-	-
Stafoam 604	6-II	-	-	-	-	-	-	-	964	-	-	-	-	-	-	-
Stainless steel coated with NBS coating A-418	6-II	-	-	-	-	-	-	-	-	-	-	-	1365-1367	-	-	-
Stainless steel coated with NBS coating N-143	6-II	-	-	-	-	-	-	-	-	-	-	-	1357-1359	-	-	-
Stainless steel coated with platinum	6-II	-	-	-	-	-	-	-	-	-	-	-	1315	-	-	-
Steatite	4-II	1285	-	-	-	-	1287	-	1293	-	1295	-	-	-	-	-
Steatite, ultra-	4-II	-	-	-	-	-	1287	-	-	-	-	-	-	-	-	-
Steatite 10B-2	4-II	-	-	-	-	-	-	-	1293	-	-	-	-	-	-	-
Steatite 12C-2	4-II	-	-	-	-	-	-	-	1293	-	-	-	-	-	-	-
Steatite, grade L-4, AlSiMag 196	4-II	-	-	-	-	-	1287	-	-	-	-	-	-	-	-	-
Steatite, grade L-5, Pass an Seymour E-211-M	4-II	-	-	-	-	-	1287	-	-	-	-	-	-	-	-	-
Steels (special designations)																
1 Kh18N9T	3	-	-	-	-	-	-	161	-	-	215	-	-	-	-	-
1. 1 C tool steel	3	-	-	-	-	-	-	-	-	14	-	-	-	-	-	-
4 Kh13	3	-	-	-	-	-	-	73	-	-	-	-	-	-	-	-
12 MoV	3	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-
15 KhM	3	-	-	-	-	-	-	-	-	-	100	-	-	-	-	-
17 - 4 PH	3	145	-	-	-	-	-	157	170	-	199	-	-	-	-	-
17 - 5 MnV	3	-	-	-	-	-	-	-	-	-	116	-	-	-	-	-
17 - 7 PH	3	140	-	-	-	-	-	159	172	-	199, 203	231	255, 259, 270	282	-	-
17 - 10 P	3	-	-	-	-	-	-	-	-	-	227	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Steels (cont.)																
18 - 8	3	-	-	-	-	-	-	-	-	-	-	-	236, 241	-	-	-
18 - 8 Cr-Cu	3	-	-	-	-	-	-	-	-	-	-	-	-	138	-	-
18 - 20 Cr-Mn	3	-	-	-	-	-	-	-	-	-	-	-	-	348	-	-
18 - 21 Cr-Co	3	-	-	-	-	-	-	-	-	-	-	-	-	302	-	-
19 - 9 DL	3	-	-	-	-	-	-	-	-	189	211	-	-	-	-	-
19 - 9 DX	3	-	-	-	-	-	-	-	-	-	225	-	-	-	-	-
23 D 245	3	-	-	-	-	-	-	-	-	85	-	-	-	-	-	-
815	3	310	-	-	-	-	-	-	-	-	340	-	-	-	-	-
A-286	3	379	-	-	-	-	-	-	391	397	401	-	409-411	413	-	-
AISI steels (see AISI designations)																
Allegheny 18 - 8 M	3	-	-	-	-	-	149	-	-	-	-	-	-	-	-	-
Allegheny steels	3	-	-	-	-	-	-	-	-	-	-	-	257	-	-	-
AM350	3	-	-	-	-	-	-	-	170	-	199	231	236, 259, 268	280	-	-
AM355	3	-	-	-	-	-	-	157	170	-	199	-	-	-	-	-
AMS 2713	3	-	-	-	-	-	-	-	385	-	-	-	-	-	-	-
AMS 2714	3	-	-	-	-	-	-	-	387	-	-	-	-	-	-	-
ATS	3	140	-	-	-	-	-	-	-	-	221	-	-	-	-	-
B-759	3	-	-	-	-	-	-	-	-	-	106	-	-	-	-	-
Carbon steel ASTM A105 grade II	3	-	-	-	-	-	-	-	-	-	337	-	-	-	-	-
Cor-ten	3	-	-	-	-	-	-	-	-	85	-	-	-	-	-	-
DVL 4/V 869	3	-	-	-	-	-	-	-	-	-	403	-	-	-	-	-
DVL 30	3	140	-	-	-	-	-	-	-	-	225	-	-	-	-	-
DVL 31	3	-	-	-	-	-	-	-	-	-	403	-	-	-	-	-
DVL 46	3	140	-	-	-	-	-	-	-	-	217	-	-	-	-	-
DVL 47	3	140	-	-	-	-	-	-	-	-	217	-	-	-	-	-
DVL 48	3	-	-	-	-	-	-	-	-	-	217	-	-	-	-	-
DVL 49	3	140	-	-	-	-	-	-	-	-	217	-	-	-	-	-
DVL 50	3	140	-	-	-	-	-	-	-	-	217	-	-	-	-	-
DVL 51	3	140	-	-	-	-	-	-	-	-	227	-	-	-	-	-
DVL 52	3	140	-	-	-	-	-	-	-	-	225	-	-	-	-	-
EI-257	3	-	-	-	-	-	-	155	-	-	-	-	-	-	-	-
EI-572	3	-	-	-	-	-	-	-	[illegible]	-	215	-	-	-	-	-
EI-606	3	-	-	-	-	-	-	-	[illegible]72	-	215	-	-	-	-	-
EI-783	3	-	-	-	-	-	-	-		-	215	-	-	-	-	-
EI-802	3	-	-	-	-	-	-	-	-	-	104	-	-	-	-	-
EI-855	3	-	-	-	-	-	-	383	394	397	-	-	-	-	-	-
EME	3	-	-	-	-	-	-	-	-	-	225	-	-	-	-	-

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Steels (cont.)																
En 8	3	-	-	-	-	-	312	-	325	-	-	-	-	-	-	-
En 19	3	-	-	-	-	-	61	-	83	-	-	-	-	-	-	-
En 31	3	-	-	-	-	-	61	-	83	-	-	-	-	-	-	-
FCM	3	311	-	-	-	-	-	-	-	-	341	-	-	-	-	-
Feni 36	3	-	-	-	-	-	-	-	-	-	369	-	-	-	-	-
G 17	3	-	-	-	-	-	-	-	391	-	-	-	-	-	-	-
GX 4881	3	-	-	-	-	-	-	-	-	85	-	-	-	-	-	-
Haynes alloy no. 90	3	-	-	-	-	-	-	-	-	-	106	-	-	-	-	-
Haynes alloy no. 93	3	-	-	-	-	-	-	-	-	-	106	-	-	-	-	-
HF grade	3	-	141	-	-	-	-	-	-	-	195	-	-	-	-	-
H. G. T. 3 (British design.) . .	3	55	-	-	-	-	61	-	81	-	102	-	-	-	-	-
High speed steel M1	3	-	-	-	-	-	-	-	351	-	-	-	-	-	-	-
High speed steel M2.	3	-	-	-	-	-	-	-	450	-	-	-	-	-	-	-
High speed steel M10	3	-	-	-	-	-	-	-	351	-	-	-	-	-	-	-
High speed steel T1	3	-	-	-	-	-	-	-	450	-	-	-	-	-	-	-
HNM crucible	3	-	-	-	-	-	-	161	176	-	227	-	-	-	-	-
HX 4249	3	-	-	-	-	-	-	-	-	85	-	-	-	-	-	-
Incoloys (see Incoloy)																
Invar H	3	-	-	-	-	-	-	-	-	-	369	-	-	-	-	-
Jessop no. 40	3	55	-	-	-	-	-	-	-	-	102	-	-	-	-	-
Jessop no. 46	3	55	-	-	-	-	-	-	-	-	104	-	-	-	-	-
Jessop G-18B	3	379	-	-	-	-	-	-	168	-	217	-	-	-	-	-
Jessop G-21	3	140	-	-	-	-	-	-	-	-	225	-	-	-	-	-
Jessop H-40	3	-	-	-	-	-	-	-	81	-	-	-	-	-	-	-
Jessop R-20	3	140	-	-	-	-	-	-	176	-	221	-	-	-	-	-
Kovar	3	-	-	-	-	-	-	-	363	-	-	-	-	-	-	-
Low carbon	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Macloy G	3	-	-	-	-	-	-	-	393	-	-	-	-	-	-	-
Mark 12MX	3	-	-	-	-	-	-	323	-	-	-	-	-	-	-	-
Mark 1x18N9T	3	-	-	-	-	-	-	161	-	-	215	-	-	-	-	-
Mild steel	3	311	-	-	-	-	-	316	-	-	-	-	-	-	-	-
Multimet N-155	3	140	-	-	-	-	-	-	180	191	219	120	126-128, 253, 259	-	-	-
Multimet N-155, low carbon .	3	-	-	-	-	-	-	-	296	-	-	-	-	-	-	-
Multimet NR-21 (AMS-55326)	3	140	-	-	-	-	-	-	-	-	219	-	-	-	-	-
Multimet NR-21, low carbon (AMS-53762)	3	-	-	-	-	-	-	-	-	-	219	-	-	-	-	-
N-A-X AC 9115	3	-	-	-	-	-	-	-	-	-	444	-	-	-	-	-
Ni-Span-C alloy 902	3	-	-	-	-	-	-	-	-	-	407	-	-	-	-	-
Okh 16N 36V3T	3	-	-	-	-	-	-	38[illegible]	-	397	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Steels (cont.)																
P-193	3	379	-	-	-	-	-	-	-	-	405	-	-	-	-	-
PH 15-7 Mo	3	145	-	-	-	-	-	-	-	-	201	231	255, 259, 272	284	-	-
Porous	3	461	-	-	-	-	463	-	-	-	-	-	-	-	-	-
Rex 78	3	-	-	-	-	-	-	-	389	-	-	-	-	-	-	-
Roneusil	3	-	-	-	-	-	-	-	-	-	-	-	-	349	-	-
S-590	3	-	-	-	-	-	-	-	-	191, 298, 397	221	-	-	-	-	-
SAE steels (see SAE designations)																
SAS-8	3	140	-	-	-	-	-	-	-	-	227	-	-	-	-	-
Steel 15	3	-	-	-	-	-	-	-	-	331	-	-	-	-	-	-
Steel 19	3	-	-	-	-	-	-	71	-	-	-	-	-	-	-	-
Steel 35	3	-	-	-	-	-	-	-	-	331	-	-	-	-	-	-
Steel 45	3	-	-	-	-	-	-	-	-	331	-	-	-	-	-	-
Tenelon	3	-	-	-	-	-	-	-	-	-	116	-	-	-	-	-
U-8	3	-	-	-	-	-	-	10	-	12	-	-	-	-	-	-
Unitemp 212	3	-	-	-	-	-	-	-	391	-	-	-	-	-	-	-
V-444D	3	-	-	-	-	-	-	-	-	-	223	-	-	-	-	-
Vacromin F	3	-	-	-	-	-	-	-	393	-	-	-	-	-	-	-
Vascojet 1000	3	-	-	-	-	-	-	-	81	-	-	-	132	136	-	-
Vickers F. D. P.	3	-	-	-	-	-	-	-	-	-	-	-	257	-	-	-
W	3	-	-	-	-	-	-	-	-	-	203	-	-	-	-	-
WF 100D	3	140	-	-	-	-	-	-	-	-	225	-	-	-	-	-
Steel, clad	6-II	-	-	-	-	-	-	-	-	-	1267	-	-	-	-	-
Stellite no. 3	2-II	-	-	-	-	-	-	-	-	-	904	-	-	-	-	-
Stellite no. 4	2-II	-	-	-	-	-	-	-	-	-	904	-	-	-	-	-
Stellite no. 6	2-II	-	-	-	-	-	-	-	-	-	902	-	-	-	-	-
Stellite no. 6B	2-II	-	-	-	-	-	-	-	-	-	902	-	-	-	-	-
Stellite no. 6K	2-II	-	-	-	-	-	-	-	-	-	902	-	-	-	-	-
Stellite no. 12	2-II	-	-	-	-	-	-	-	-	-	902	-	-	-	-	-
Stellite no. 19	2-II	-	-	-	-	-	-	-	-	-	904	-	-	-	-	-
Stellite no. 21 (AMS-5385; NR-10)	2-II	879	-	-	-	-	-	884	886	-	894	-	-	-	-	-
Stellite no. 23 (AMS-5375; NDRC-61)	2-II	879	-	-	-	-	-	-	886	-	900	-	-	-	-	-
Stellite no. 25 (L-605)	2-II	879, 882	-	-	-	-	-	-	-	890	898	-	908-914	916	-	-
Stellite no. 25 (L-605) coated with iron (ic) oxide	6-II	-	-	-	-	-	-	-	-	-	-	-	1381-1383	-	-	-
Stellite no. 27 (AMS-5378; NR-60)	2-II	1219	-	-	-	-	-	-	1223	-	1225	-	-	-	-	-

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Stellite no. 30 (AMS-5380; NR-12)	2-II	879	-	-	-	-	-	-	-	-	896	-	-	-	-	-
Stellite no. 31 (AMS-5382; NR-71)	2-II	879	-	-	-	-	-	-	886	-	896	-	-	-	-	-
Stellite no. 36 (L-251)	2-II	879	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stellite 98M2	2-II	-	-	-	-	-	-	-	-	-	906	-	-	-	-	-
Stellite HE1049	2-II	-	-	-	-	-	-	884	888	-	900	-	-	-	-	-
Stellite Star J-metal	2-II	-	-	-	-	-	-	-	-	-	906	-	-	-	-	-
Strontium (Sr)	1	924	924	-	-	-	926	-	-	-	928	-	-	-	-	-
Strontium aluminates																
$SrO \cdot Al_2O_3$	4-II	1025	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$SrO \cdot 2\ Al_2O_3$	4-II	-	1025	-	-	-	-	-	-	-	1027	-	-	-	-	-
$3\ SrO \cdot Al_2O_3$	4-II	1025	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium aluminum silicate ($SrO \cdot Al_2O_3 \cdot 2\ SiO_2$)	4-II	-	-	-	-	-	-	-	-	-	1334	-	-	-	-	-
Strontium barium cerium titanate $[(Ba_{1-x-y}Sr_xCe_y)O \cdot TiO_2]$.	4-II	-	-	-	-	-	1466	-	-	-	-	-	-	-	-	-
Strontium barium cerium titanate stannate $[(Ba_{1-x}Sr_{x-y}Ce_y)O \cdot (Ti_{1-z}Sn_z)O_2]$	4-II	-	-	-	-	-	1363	-	-	-	-	-	-	-	-	-
Strontium borate glass	4-II	-	-	-	-	-	-	-	-	-	1633	-	-	-	-	-
Strontium (hexa-)boride (SrB_6) .	6-I	295	296	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium chloride ($SrCl_2$) . . .	5	-	-	-	-	-	-	333	-	-	-	-	-	-	-	-
Strontium copper silicate ($SrO \cdot CuO \cdot 4\ SiO_2$)	4-II	-	-	-	-	-	-	-	-	-	1336	-	-	-	-	-
Strontium fluoride (SrF_2)	5	397	397	-	-	-	-	399	-	-	-	-	-	401	-	-
Strontium lead silicate glass . .	4-II	-	-	-	-	-	1823	-	-	-	-	-	-	-	-	-
Strontium oxide (SrO)	4-I	387	387	-	-	387	389	391	393	-	395	-	-	-	-	397
Strontium oxide + Lithium (meta-) aluminate + Aluminum oxide	4-II	-	-	-	-	-	-	-	1540	-	-	-	-	-	-	-
Strontium oxide + Lithium zirconium silicate + Aluminum oxide	4-II	-	-	-	-	-	-	-	1542	-	-	-	-	-	-	-
Strontium oxide + Lithium zirconium silicate + Zinc oxide	4-II	-	-	-	-	-	-	-	1544	-	-	-	-	-	-	-
Strontium oxide + Titanium (di-) oxide	4-I	-	828	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium oxide + Titanium (di-) oxide + Lithium zirconium silicate	4-II	-	-	-	-	-	-	-	1546	-	-	-	-	-	-	-
Strontium oxide + Zinc oxide + + Lithium zirconium silicate .	4-II	-	-	-	-	-	-	-	1548	-	-	-	-	-	-	-
Strontium silicates																
$SrO \cdot SiO_2$	4-II	1332	1332	-	-	-	-	-	-	-	-	-	-	-	-	-
$2\ SrO \cdot SiO_2$	4-II	1332	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Strontium sulfide (SrS).	5	-	-	-	-	-	-	712	-	-	-	-	-	-	-	-
Strontium titanates																
$SrO \cdot TiO_2$	4-II	1456	1456	-	-	-	1458	1460	1462	-	1464	-	-	-	-	-
$SrO \cdot 2\ TiO_2$	4-II	-	-	-	-	-	-	-	-	-	1464	-	-	-	-	-
$2\ SrO \cdot TiO_2$	4-II	-	-	-	-	-	-	1460	-	-	-	-	-	-	-	-
Strontium titanate coating on AISI 310	6-II	-	-	-	-	-	-	-	-	-	-	-	1393	-	-	-
Strontium titanate + Cobalt cermet	6-II	-	-	-	-	-	-	-	792	-	-	-	-	-	-	-
Strontium uranate ($SrO \cdot UO_3$). .	4-II	-	1482	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium zirconate ($SrO \cdot ZrO_2$).	4-II	1514	-	-	-	-	-	1516	-	-	1518	-	-	-	-	-
Styrene-butadiene copolymer . .	6-II	-	-	-	-	-	-	1054	-	-	-	-	-	-	-	-
Styrofoam Q-103	6-II	-	-	-	-	-	-	-	1090	-	-	-	-	-	-	-
Super Dylon	6-II	1030	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Supramica 557	5	-	-	-	-	-	987	-	-	-	-	-	-	-	-	-
Svea Iron	1	-	-	-	-	-	-	-	585	-	-	-	-	-	-	-
T																
TAC polyester	6-II	974	-	-	-	-	-	-	976	-	978	-	-	-	-	-
TAC polyester resin, reinforced	6-II	1180	-	-	-	-	-	1183	1185	1220	1187-1189	-	-	-	-	-
Talc	4-II	-	-	-	-	-	-	1289	-	-	-	-	-	-	-	-
Tan 9-4 tantalum	1	-	-	-	-	-	-	934	-	-	-	-	-	-	-	-
Tantalum (Ta)	1	930	930	-	-	930	932	934	936	938	940	942	944-950	952	-	954
Tantalum coated with aluminide.	6-II	-	-	-	-	-	-	-	-	-	-	-	1441-1443	1445	-	-
Tantalum coated with cobalt oxide	6-II	-	-	-	-	-	-	-	-	-	-	-	1373-1375	-	-	-
Tantalum coated with pyrolytic graphite	6-II	-	-	-	-	-	-	-	-	-	-	-	1297-1299	-	-	-
Tantalum coated with silicide. .	6-II	-	-	-	-	-	-	-	-	-	-	-	1473-1475	1477	-	-
Tantalum coated with silicon carbide	6-II	-	-	-	-	-	-	-	-	-	-	-	1411-1413	-	-	-
Tantalum coated with tantalum aluminide	6-II	-	-	-	-	-	-	-	-	-	-	-	1461-1463	1465	-	-
Tantalum + Copper + ΣX_i . . .	2-II	1388	-	-	-	-	-	-	1390	-	1392	-	-	-	-	-
Tantalum + Niobium	2-I	-	-	-	-	-	463	-	465	-	-	-	-	-	-	-
Tantalum + Niobium + ΣX_i . . .	2-II	-	-	-	-	-	-	1394	1396	1398	1400	-	-	-	-	-
Tantalum + Titanium	2-I	467, 549	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tantalum + Tungsten	2-I	-	-	-	-	-	-	469	471	473	475	477-479	-	-	-	-

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Tantalum + Tungsten + ΣX_i . . .	2-II	–	1402	–	–	–	1404	1406	1408	1410	1412	–	–	–	–	–
Tantalum + Zirconium + ΣX_i . .	2-II	1414	–	–	–	–	–	1416	1418	–	1420	–	–	–	–	–
Tantalum alloys (special designations)																
30 Nb - 7.5 V	2-II	–	–	–	–	–	–	1394	–	1398	–	–	–	–	–	–
8 W - 2 Hf	2-II	–	1402	–	–	–	1404	1406	–	1410	–	–	–	–	–	–
Tantalum aluminide ($TaAl_3$) . .	6-I	–	–	–	–	–	–	–	–	–	–	–	–	25	–	–
Tantalum aluminides coating on tantalum	6-II	–	–	–	–	–	–	–	–	–	–	–	1461-1463	1465	–	–
Tantalum antimonide (TaSb) . .	6-I	–	–	–	–	–	71	–	73	–	–	–	–	–	–	–
Tantalum arsenide (Ta_2As_3) . .	6-I	–	–	–	–	–	96	–	–	–	–	–	–	–	–	–
Tantalum beryllides																
$TaBe_{12}$	6-I	–	122	–	–	–	–	124	126	–	128	–	130-132	134	–	–
Ta_2Be_{17}	6-I	–	122	–	–	–	–	124	126	–	128	–	130-132	134	–	–
Tantalum beryllide + Beryllium oxide	5	–	–	–	–	–	–	–	–	–	–	–	868-870	872	–	–
Tantalum beryllide + Beryllium oxide + Tantalum (pent-)oxide .	5	–	–	–	–	–	–	–	–	–	–	–	874-876	878	–	–
Tantalum beryllide + Tantalum (pent-)oxide	5	–	–	–	–	–	–	–	–	–	–	–	880-882	884	–	–
Tantalum borides																
TaB	6-I	212	212	–	–	–	–	214	216	–	218	–	–	–	–	–
TaB_2	6-I	212	212	–	–	–	–	214	–	–	220	–	–		–	–
Ta_3B_2	6-I	–	212	–	–	–	–	–	–	–	–	–	–	–	–	–
Ta_3B_4	6-I	212	212	–	–	–	–	–	–	–	–	–	–	–	–	–
Tantalum carbides																
TaC	5	141	141	–	–	–	143	145	147	149	151	–	154-158	–	–	160
Ta_2C	5	–	141	–	–	–	–	–	–	–	–	–	–	–	–	–
Tantalum carbide coating on Inconel X	6-II	–	–	–	–	–	–	–	–	–	–	–	1417	1419	–	–
Tantalum carbide + Iron cermet .	6-II	858	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Tantalum carbide + Tungsten cermet	6-II	–	–	–	–	–	–	–	–	–	860	–		–	–	–
Tantalum-cobalt intermetallics ($TaCo_2$)	6-I	–	684	–	–	–	–	–	–	–	–	–	–	–	–	–
Tantalum-chromium intermetallics ($TaCr_2$)	6-I	–	684	–	–	–	–	–	–	–	–	–	–	–	–	–
Tantalum ferrides ($TaFe_2$) . . .	6-I	–	306	–	–	–	–	–	–	–	–	–	–	–	–	–
Tantalum germanides																
TaGe	6-I	–	–	–	–	–	325	–	–	–	–	–	–	–	–	–

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Tantalum germanides (cont.)																
$TaGe_2$	6-I	-	-	-	-	-	325	-	327	-	-	-	-	-	-	-
Ta_4Ge	6-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	321
Tantalum germanide silicides																
$TaGeSi_2$	6-I	-	-	-	-	-	-	-	529	-	-	-	-	-	-	-
$TaGe_xSi_{1-x}$	6-I	-	-	-	-	-	-	-	529	-	-	-	-	-	-	-
Tantalum iron lead oxide ($4\ PbO \cdot Fe_2O_3 \cdot Ta_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1157	-	-	-	-	-
Tantalum nitrides																
TaN	5	557	557	-	-	-	559	561	563	-	565	-	567-569	-	-	-
Ta_2N	5	-	557	-	-	-	-	-	-	-	-	-	-	-	-	-
Tantalum (pent-)oxide (Ta_2O_5) .	4-I	-	-	-	-	-	-	399	-	-	401	-	403-405	407	-	-
Tantalum (pent-)oxide + + Tantalum beryllide	5	-	-	-	-	-	-	-	-	-	-	-	-	789	-	-
Tantalum phosphide (TaP) . . .	5	635	636	-	-	-	639	-	-	-	-	-	-	-	-	-
Tantalum selenides ($TaSe_2$). . .	6-I	-	-	-	-	-	367	-	369	-	-	-	-	-	-	-
Tantalum silicides																
Ta_5Si_3	6-I	-	467	-	-	-	-	-	-	-	-	-	-	-	-	-
$TaSi_2$	6-I	-	467	-	-	-	527	469	529	-	471	-	473-475	477	-	-
Ta_2Si	6-I	-	467	-	-	-	-	-	-	-	-	-	-	-	-	-
Ta_5Si_2	6-I	-	467	-	-	-	-	-	-	-	-	-	-	-	-	-
$Ta_{4.5}Si$	6-I	-	467	-	-	-	-	-	-	-	-	-	-	-	-	-
(Penta-) tantalum (tri-) silicide + + (Di-) molybdenum boride . .	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
Tantalum silicide germanides																
$TaGe_{1-x}Si_x$	6-I	-	-	-	-	-	325	-	-	-	-	-	-	-	-	-
TaGeSi	6-I	-	-	-	-	-	325	-	-	-	-	-	-	-	-	-
Tantalum tellurides																
TaTe	6-I	-	-	-	-	-	-	-	640	-	-	-	-	-	-	-
$TaTe_2$	6-I	-	-	-	-	-	630	-	640	-	-	-	-	-	-	-
$Ta_{31}Te_3$	6-I	-	-	-	-	-	630	-	-	-	-	-	-	-	-	-
Tantalum tungsten selenide ($W_{1-x}Ta_xSe_2$)	6-I	-	-	-	-	-	357	-	-	-	-	-	-	-	-	-
Teflon	6-II	1030	-	-	-	-	-	1035	1039	-	1045	-	-	-	-	-
Teflon, type TF-1	6-II	1030	-	-	-	-	-	-	-	-	1045	-	-	-	-	-
Teflon, barium titanate filled. .	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, boron carbide filled .	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, calcium boride filled . .	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, carbonyl iron grade HP filled	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, J-ferrite filled	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, J-mica filled	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Teflon laminate	6-II	-	-	-	-	-	-	1214	1218	1220	-	-	-	-	-	-
Teflon, litharge filled	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, powdered iron-9 filled	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, quartz no. 7900 filled	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, reinforced	6-II	1097	-	-	-	-	-	-	1099	-	-	-	-	-	-	-
Teflon, titanium dioxide filled	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Teflon, zero-plast type 6 filled	6-II	1032	-	-	-	-	-	-	-	-	1043	-	-	-	-	-
Television tube glass	6-II	-	-	-	-	-	-	-	-	-	-	-	1743	1745	1747	-
Tellurite	4-I	409	409	-	-	409	-	411	-	-	-	-	413	-	415	417
Tellurium (Te)	1	-	-	-	-	-	-	-	964	-	-	-	-	-	-	-
Tellurium + Chromium	2-I	-	-	-	-	-	481	483	-	-	-	-	-	-	-	-
Tellurium copper	2-I	-	-	-	-	-	-	-	-	-	152	-	-	-	-	-
Brass, tellurium-nickel	2-II	-	-	-	-	-	-	-	-	-	1002	-	-	-	-	-
Tellurium (di-)oxide (TeO_2)	4-I	409	409	-	-	409	-	411	-	-	-	-	413	-	415	417
Tellurium oxide - molybdenum oxide glass	4-II	-	-	-	-	-	-	-	-	-	1641	-	-	-	-	-
Tellurium oxide - tungsten oxide glass	4-II	-	-	-	-	-	-	-	-	-	1643	-	-	-	-	-
Tenite I 0072-MS	6-II	-	-	-	-	-	-	-	-	-	941	-	-	-	-	-
Tenite I 204-MS	6-II	-	-	-	-	-	-	-	-	-	946	-	-	-	-	-
Tenite II 205A-MS	6-II	-	-	-	-	-	-	-	-	-	946	-	-	-	-	-
Tenite G 204-H2	6-II	-	-	-	-	-	-	-	-	-	946	-	-	-	-	-
Tenite Q 264-H2	6-II	-	-	-	-	-	-	-	-	-	946	-	-	-	-	-
Tenite S 264-MS	6-II	-	-	-	-	-	-	-	-	-	946	-	-	-	-	-
Terbium (Tb)	1	956	956	956	956	956	958	960	-	-	962	-	-	-	-	-
Terbium borides																
TbB_4	6-II	295	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TbB_6	6-I	295	-	-	-	-	390	-	-	-	-	-	-	-	-	-
Terbium carbides																
TbC_2	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tb_2C_3	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Terbium-cobalt intermetallics ($TbCo_5$)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Terbium-gallium intermetallics ($TbGa_2$)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Terbium hydride (TbH_3)	5	467	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Terbium oxide ($TbO_{1.81}$)	4-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	419
Thorianite	4-I	421	421	-	-	422	425	428	430	-	432	-	435	-	-	437
Thorite	4-II	-	-	-	-	-	-	-	-	-	1338	-	-	-	-	-
Thorium (Th)	1	966	966	967	-	-	971	973	975	977	979	-	981	-	-	983
Thorium + Plutonium	2-I	411, 485	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium + Titanium	2-I	-	-	-	-	-	-	-	-	-	487	-	-	-	-	-
Thorium + Uranium	2-I	-	-	-	-	-	489	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Thorium + Uranium + ΣX_i	2-II	-	1422	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium + Zirconium	2-I	-	-	-	-	-	-	-	-	-	491	-	-	-	-	-
Thorium + Zirconium + ΣX_i	2-II	-	1424	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium aluminate ($2\,ThO_2 \cdot 3\,Al_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	1029	-	-	-	-	-
Thorium antimonides																
$ThSb$	6-I	81	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$ThSb_2$	6-I	81	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Th_3Sb_4	6-I	81	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium borides																
ThB_4	6-I	222	222	-	-	-	224	226	228	-	230	-	232	-	-	-
ThB_6	6-I	-	222	-	-		224	-	-	-	-	-	-	-	-	-
Thorium carbides																
ThC	5	-	162	-	-	-	-	-	168	-	-	-	172	-	-	-
ThC_2	5	162	162	-	-	-	164	166	168	-	170	-	172	-	-	-
Thorium carbide + Uranium (di-)carbide	5	-	-	-	-	-	-	-	-	-	301	-	-	-	-	-
Thorium chloride ($ThCl_4$)	5	339	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium fluoride (ThF_4)	5	403	403	403	403	403	-	-	-	-	-	-	-	-	-	405
Thorium hydrides																
ThH_2	5	439	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ThH_3	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	441
Thorium-manganese intermetallics																
$ThMn_{12}$	6-I	683	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Th_6Mn_{23}	6-I	683	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium nitrides																
ThN	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Th_3N_4	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium (di-)oxide (ThO_2)	4-I	421	421	-	-	422	425	428	430	-	432	-	435	-	-	437
Thorium (di-)oxide, molybdenum fibers reinforced	6-II	-	-	-	-	-	-	-	1265	-	-	-	-	-	-	-
Thorium (di-)oxide + Aluminum oxide	4-I	-	830	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium (di-)oxide + Aluminum oxide + Beryllium oxide	4-I	-	832	-	-	-	-	-	-	-	-	-	-	-	-	-
Thorium (di-)oxide + Graphite	5	-	-	-	-	-	-	-	739	-	-	-	-	-	-	-
Thorium (di-)oxide + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	794
Thorium (di-)oxide + Uranium (di-)oxide	4-I	-	-	-	-	-	834	-	-	-	-	-	-	-	-	-
Thorium (di-)oxide + Uranium (di-)oxide + Yttrium oxide	4-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	836
Thorium (di-)oxide + Zirconium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	838	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Thorium (ortho-)silicate ($ThO_2 \cdot SiO_2$)	4-II	-	-						-		1338	-	-	-	-	-
Thorium silicides																
$ThSi$	6-I		524					-	-	-		-	-	-	-	-
$ThSi_2$	6-I	-	523, 524	-			-	-	-	-	-	-	-	-	-	-
Thorium sulfides																
ThS	5	714	714	-		-	-	-		-	718	-	-	-	-	-
ThS_2	5	714	714		-			716	-	-	-	-	-	-	-	-
Th_2S_3	5		714			-		-	-	-		-	-	-	-	-
Th_4S_7	5	714	714				-	-	-	-		-	-	-	-	-
Th_7S_{12}	5		714			-		-	-	-	-	-	-	-	-	-
Thorium uranium beryllide $(Th,U)Be_{13}$	6-I			-		-		-	-	-	136	-	-	-	-	-
Thorium uranium boride $(Th,U)B_4$	6-I	-				-	-	-	-	-	234	-	-	-	-	-
Thorium uranium carbides																
$(Th,U)C$	5		-			-	-	-	-	-	174	-	-	-	-	-
$(Th,U)C_2$	5	-	-	-	-	-	-	-	-	-	174	-	-	-	-	-
Thulia	4-I	-		-		-	-	-	-	-	439	-	-	-	-	-
Thulium (Tm)	1	985	985	985	985	985	987	989		-	-	-	-	-	-	991
Thulium (hexa-)boride (TmB_6)	6-I	295	-			-		-			-	-	-	-	-	-
Thulium carbide (TmC_2)	5	294				-		-					-	-	-	-
Thulium oxide (Tm_2O_3)	4-I				-	-	-	-	-	-	439	-	-	-	-	-
Tin + Magnesium	2-I	-			-	-	493	-	-	-	-	-	-	-	-	-
Tin(ic) aluminate ($2SnO_2 \cdot 3Al_2O_3$)	4-II	-			-	-			-	-	1031	-	-	-	-	-
Tin(ic) oxide (SnO_2)	4-I	-		-	-	-		-	441	-	443	-	-	-	-	-
Tin(ic) oxide + Magnesium oxide	4-I	-		-	-	-		-	840	-	-	-	-	-	-	-
Tin(ic) oxide + Magnesium oxide + Zinc oxide	4-I			-		-	-		842	-	-			-	-	-
Tin(ic) oxide + Vanadium (pent-)oxide	4-I			-		-		-	-	-	844			-	-	-
Tin(ic) oxide + Zinc oxide	4-I	-	-		-	-	-	-	846	-	-		-	-	-	-
Tin(ic) oxide + Zinc oxide + Magnesium oxide	4-I			-			-	-	848	-	-		-	-	-	-
Tin(ous) (ortho-)phosphate ($3SnO \cdot P_2O_5$)	4-II	-							-	-	1179	-	-	-	-	-
Tin sulfide (SnS)	5				-		-	-				-	-	720	-	-
Tin telluride (SnTe)	6-I				-		642					-	-	-	-	-
Tin telluride + Silver antimony telluride	6-I		-		-		-	-	721	-	-	-	-	-	-	
Tin-zirconium intermetallics																
$SnZr$[illegible]	6-I		684								-	-	-	-	-	
Sn_3Zr_5	6-I		684						-					-		

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Titanium (Ti)	1	993	993	-	-	993	996	999	1001	1003	1005	-	1007-1013	1015	-	1017
Titanium coated with aluminide	6-II	-	-	-	-	-	-	-	-	-	-	-	1447-1449	1451	-	-
Titanium coated with aluminized-silicone paint	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1497	-	-
Titanium coated with gold	6-II	-	-	-	-	-	-	-	-	-	-	-	1303	1305	-	-
Titanium coated with silicides	6-II	-	-	-	-	-	-	-	-	-	-	-	1479-1481	1483	-	-
Titanium A-55	1	-	-	-	-	-	996	-	-	-	1005	-	-	-	-	-
Titanium A-70	1	-	-	-	-	-	-	-	-	-	1005	-	-	-	-	-
Titanium Ti-75A	1	-	-	-	-	-	996	999	1001	-	1005	-	1007-1009	1015	-	-
Titanium Ti-75A (AMS 4901) coated with Dow-Corning XP-310	6-II	-	-	-	-	-	-	-	-	-	-	-		1497	-	-
Titanium RC-55	1	-	-	-	-	-	996	-	-	-	-	-	-	-	-	-
Titanium VT-1	1	-	-	-	-	-	-	-	-	1003	-	-	-	-	-	-
Titanium + ΣX_i	2-II	1502	-	-	-	-	1504	1506		-	1508	-	-	-	-	-
Titanium + Aluminum	2-I	-	-	-	-	-	495-501	-	503	505	-	-	-	-	-	-
Titanium + Aluminum + ΣX_i	2-II	-	-	-	-	-	1426-1432	1434	1436-1442	1444-1446	1448-1454	-	1456-1459	1461	-	-
Titanium + Chromium	2-I	-	-	-	-	-	-	-	-	-	507	-	-	-	-	-
Titanium + Chromium + ΣX_i	2-II	-	-	-	-	-	-	1464	1466	-	1468	-	-	-	-	-
Titanium + Copper	2-I	-	-	-	-	-	509	-	-	-	511	-	-	-	-	-
Titanium + Germanium	2-I	-	-	-	-	-	513	-	-	-	515	-	-	-	-	-
Titanium + Iron	2-I	-	-	-	-	-	-	-	-	-	517	-	-	-	-	-
Titanium + Iron + ΣX_i	2-II	1470	-	-	-	-	1472	-	1474	-	1476	-	-	-	-	-
Titanium + Manganese	2-I	519	-	-	-	-	521	523	525	527	529	-	531-535	537	-	-
Titanium + Manganese + ΣX_i	2-II	-	-	-	-	-	1478	-	-	-	1480	-	-	-	-	-
Titanium + Molybdenum	2-I	-	-	-	-	-	-	-	-	-	539	-	-	-	-	-
Titanium + Molybdenum + ΣX_i	2-II	-	-	-	-	-	1482	-	-	-	-	-	-	-	-	-
Titanium + Nickel	2-I	-	-	-	-	-	-	-	-	-	541	-	-	-	-	-
Titanium + Niobium	2-I	-	-	-	-	-	543	-	-	-	545	-	-	-	-	-
Titanium + Silicon	2-I	-	-	-	-	-	-	-	-	-	547	-	-	-	-	-
Titanium + Tantalum	2-I	549	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium + Tin	2-I	-	-	-	-	-	551	-	553	-	-	-	-	-	-	-
Titanium + Tin + ΣX_i	2-II	-	-	-	-	-	1484	-	1486	-	-	-	-	-	-	-
Titanium + Tungsten	2-I	555	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium + Vanadium	2-I	557	-	-	-	-	-	-	-	-	559	-	-	-	-	-
Titanium + Vanadium + ΣX_i	2-II	1488	-	-	-	-	-	1490	1492	-	1494	-	-	1496	-	-
Titanium + Zirconium	2-I	-	-	-	-	-	561	-	-	-	563	-	-	-	-	-
Titanium + Zirconium + ΣX_i	2-II	-	-	-	-	-	1498	-	1500	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Titanium alloys (special designations)																
2.5 Al - 16 V	2-II	-	-	-	-	-	-	1490	-	-	-	-	-	-	-	-
3 Al - 2.5 V	2-II	-	-	-	-	-	-	-	-	-	1454	-	-	-	-	-
4 Al - 3 Mo	2-II	-	-	-	-	-	-	-	-	-	1452	-	-	-	-	-
4 Al - 3 Mo - 1 V	2-II	-	-	-	-	-	-	1434	-	-	-	-	-	-	-	-
4 Al - 4 Mn	2-II	-	-	-	-	-	-	-	-	-	1450, 1481	-	-	-	-	-
6 Al - 4 V	2-II	-	-	-	-	-	1428	1434	1440	1444	1454	-	1456-1459	-		-
7 Al - 4 Mo	2-II	-	-	-	-	-	-	-	-	-	1452	-		-		-
7 Al - 2 Nb - 1 Ta	2-II	-	-	-	-	-	-	-	-	-	1448	-	-	-	-	-
13 V - 11 Cr - 3 Al	2-II	-	-	-	-	-		1490	-		-	-	-	-	-	-
48 - OT - 3	2-I	-	-	-	-	-	-	-	-	505	-	-	-	-	-	-
A - 110 AT	2-II	-	-	-	-	-	1432	-	1438	-	1448	-	1456-1459	1461	-	-
B120VCA (crucible heat no. R6759 sheet no. 9MB3)	2-II	-	-	-	-	-	-	-	1492	-	1494	-	-	1496	-	-
BT-5	2-I	-	-	-	-	-	-	-	-	505	-	-	-	-	-	-
C-110M	2-I	-	-	-	-	-	521	523	525	527	529	-	533-535	537	-	-
C-120AV	2-II	-	-	-	-	-	-	-	-	-	1454	-	-	-	-	-
C-130AM	2-II	-	-	-	-	-	1426, 1478	-	1442	-	-	-	-	-	-	-
Cr - Mo	2-II	-	-	-	-	-	-	-	1466	-	-	-	-	-	-	-
Heat no. 32167 and sheet no. 1777A-1	2-II	-	-	-	-	-	-	-	-	-	1454	-	-	-	-	-
Heat no. R6736 sheet no. B-32	2-II	-	-	-	-	-	-	-	1436	-	1452	-	-	-	-	-
Heat no. 23345 sheet no. 1149-3	2-II	-	-	-	-	-	-	-	1492	-	1494	-	-	-	-	-
Hylite 20	2-II	-	-	-	-	-	1432	-	1438	-	-	-	-	-	-	-
Hylite 30	2-II	-	-	-	-	-	1426, 1478	-	1442	-	-	-	-	-	-	-
Hylite 40	2-II	-	-	-	-	-	1426, 1478	-	1442	-		-	-	-	-	
Hylite 50	2-II	-	-	-	-	-	1432, 1482	-	1436	-	-	-	-	-	-	-
Hylite 55	2-II	-	-	-	-	-	1484	-	1486	-	-	-	-	-	-	-
Hylite 60	2-II	-	-	-	-	-	1484	-	1486	-	-	-	-	-	-	-
MST-3Mn	2-II	-	-	-	-	-	-	-	-	-	1481	-	-	-	-	-
RC-130A	2-I	-	-	-	-	-	521	523	525	527	529	-	533-535	537	-	-
RC-130B	2-II	-	-	-	-	-	1426, 1478	-	-	-	1450	-	-	-	-	-
RMI-8Mn	2-II	-	-	-	-	-	-	-	-	-	1481	-	-	-	-	-
RMI-30	2-I	-	-	-	-	-	-	-	-	-	517	-	-	-	-	-
RMI-40	2-I	-	-	-	-	-	-	-	-	-	517	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Titanium alloys (special designations) (cont.)																
RMI-55	2-I	-	-	-	-	-	-	-	-	-	517	-	-	-	-	-
RMI-70	2-I	-	-	-	-	-	-	-	-	-	517	-	-	-	-	-
RS-120	2-I	-	-	-	-	-	-	-	-	-	-	-	531	-	-	-
Ti-140A	2-II	-	-	-	-	-	1472	-	1474	-	-	-	-	-	-	-
Ti-150A	2-II	-	-	-	-	-	-	-	1466	-	-	-	-	-	-	-
Ti-155A	2-II	-	-	-	-	-	1432	-	1442	-	-	-	-	-	-	-
Titanium alloy 6 Al - 4 V coated with Rokide C	6-II	-	-	-	-	-	-	-	-	-	-	-	1345-1347	-	-	-
Titanium aluminide (TiAl) . . .	6-I	27	27	-	-	-	-	-	-	-	-	-	29-31	33	-	-
Titanium aluminide + Aluminum oxide	5	-	-	-	-	-	-	-	-	-	-	-	862-864	866	-	-
Titanium beryllides																
TiBe	6-I	138	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$TiBe_2$	6-I	138	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$TiBe_{12}$	6-I	-	-	-	-	-	-	140	142	-	-	-	-	-	-	-
Titanium borides																
TiB	6-I	236	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TiB_2	6-I	236	236	-	-	-	238	240	242	-	244	-	246-248	-	-	-
Ti_2B	6-I	-	236	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (di-)boride + + Aluminum boride	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (di-)boride + + Boracic acid	5	-	-	-	-	-	-	-	-	-	-	-	886-888	890	-	-
Titanium (di-)boride + + Chromium (di-)boride . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (di-)boride + + (Penta-)niobium (tri-)-silicide	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (di-)boride + + Tantalum (di-)silicide . .	6-I	-	724	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (di-)boride + + Titanium (di-)oxide . . .	5	-	-	-	-	-	-	-	-	-	-	-	892-894	896	-	-
Titanium (di-)boride + + Titanium (di-)oxide + + Boracic acid	5	-	-	-	-	-	-	-	-	-	-	-	898-900	902	-	-
Titanium (di-)boride + + Titanium nitride . . .	5	-	-	-	-	-	-	-	-	-	801	-	-	-	-	-
Titanium (di-)boride + + Vanadium (di-)boride . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium carbide (TiC) . . .	5	176	176	-	-	-	178	180	182	185	187	-	189-193	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Titanium carbide + Cobalt cermet	6-II	862	-	-	-	-	-	-	911	-	864	-	-	-	-	-
Titanium carbide + Molybdenum + + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	866	-	-	-	-	-
Titanium carbide + Nickel cermet	6-II	868	-	-	-	-	-	871	873	-	875-877	-	-	-	-	-
Titanium carbide + Niobium carbide + Nickel cermet . . .	6-II	-	-	-	-	-	-	-	911	-	-	-	-	-	-	-
Titanium carbide + Tungsten cermet	6-II	-	-	-	-	-	-	-	-	-	879	-	-	-	-	-
Titanium-chromium intermetallics ($TiCr_2$)	6-I	-	-	-	-	-	-	-	-	-	-	-	656-658	660	-	-
Titanium-chromium intermetallics + Chromium (sesqui-)-oxide	5	-	-	-	-	-	-	-	-	-	926	-	928-930	932	-	-
Titanium-chromium intermetallics + Chromium (sesqui-)-oxide + Titanium (di-)oxide . .	5	-	-	-	-	-	-	-	-	-	-	-	934-936	938	-	-
Titanium-chromium intermetallics + Titanium (di-)oxide . .	5	-	-	-	-	-	-	-	-	-	-	-	940-942	944	-	-
Titanium ferrides																
TiFe	6-I	-	306	-	-	-	-	-	-	-	-	-	-	-	-	-
$TiFe_2$	6-I	-	306	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium-gold intermetallics																
TiAu	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
$TiAu_2$	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Ti_3Au	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium hydride (TiH)	5	-	-	-	-	-	443	445	-	-	-	-	-	-	-	-
Titanium iodide (TiI_2)	5	-	-	-	-	-	-	-	-	-	475	-	-	-	-	-
Titanium nitride (TiN)	5	571	571	-	-	-	573	575	577	579	581	-	584	-	-	-
Titanium nitride + Chromium + + Titanium cermet	6-II	-	-	-	-	-	-	-	-	-	909	-	-	-	-	-
Titanium nitride + Titanium (di-)boride	5	-	-	-	-	-	-	-	-	-	842	-	-	-	-	-
Titanium oxides																
TiO	4-I	-	-	-	-	446	-	452	-	-	462	-	-	-	-	479
TiO_2	4-I	445	445	-	-	446	450	454	460	-	462	465	467-471	473-475	477	479
Ti_2O_3	4-I	-	-	-	-	-	-	456	-	-	-	-	-	-	-	-
Ti_3O_5	4-I	-	-	-	-	-	-	458	-	-	-	-	-	-	-	479
Titanium (mon-)oxide + + Chromium-titanium alloys cermet	6-II	-	-	-	-	-	-	-	-	-	796	-	-	-	-	-

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Titanium (di-) oxide and aluminum oxide coating on molybdenum	6-II	-	-	-	-	-	-	-	-	-	-	-	1395	-	-	-
Titanium (di-) oxide + Antimony (tri-) oxide	4-I	-	-	-	-	-	-	-	-	-	850	-	-	-	-	-
Titanium (di-) oxide + Beryllium oxide + Calcium titanium silicate + Magnesium oxide	4-II	-	-	-	-	-	-	-	-	-	1550	-	-	-	-	-
Titanium (di-) oxide + Lithium carbonate	4-II	-	-	-	-	-	-	-	-	-	1552	-	-	-	-	-
Titanium (di-) oxide + Manganese (di-) oxide	4-I	-	-	-	-	-	-	-	-	-	852	-	-	-	-	-
Titanium (di-) oxide + Niobium (pent-) oxide	4-I	-	854	-	-	-	-	-	-	-	856	-	-	-	-	-
Titanium (di-) oxide + Silicon (di-) oxide	4-I	-	-	-	-	-	858	-	-	-	860	-	-	-	-	-
Titanium (di-) oxide + Strontium oxide	4-I	-	862	-	-	-	-	-	-	-	-	-	-	-	-	-
Titanium (di-) oxide + Tin(ic) oxide	4-I	-	-	-	-	-	-	-	-	-	864	-	-	-	-	-
Titanium (di-) oxide + Titanium (di-) boride	5	-	-	-	-	-	-	-	-	-	-	-	791-793	795	-	-
Titanium (di-) oxide + Tungsten (tri-) oxide	4-I	-	-	-	-	-	-	-	-	-	866	-	-	-	-	-
Titanium (di-) oxide + Vanadium (pent-) oxide	4-I	-	-	-	-	-	-	-	-	-	868-870	-	-	-	-	-
Titanium (di-) oxide + Zirconium (di-) oxide	4-I	-	-	-	-	-	-	-	-	-	872	-	-	-	-	-
Titanium phosphates																
$TiO_2 \cdot P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1181	-	-	-	-	-
$5\ TiO_2 \cdot 2\ P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1181	-	-	-	-	-
Titanium phosphide (TiP)	5	635	636	-	-	-	639	-	-	-	-	-	-	-	-	-
Titanium silicides																
TiSi	6-I	-	479	-	-	-	-	481	-	-	483	-	-	-	-	-
$TiSi_2$	6-I	479	479	-	-	-	-	481	-	-	483	-	485-487	489	-	-
Ti_5Si_3	6-I	-	479	-	-	-	-	481	-	-	483	-	-	489	-	-
Titanium (di-) silicide + + (Penta-) titanium (tri-) silicide	6-I	-	-	-	-	-	-	-	-	-	-	-	693-695	697	-	-
(Penta-) titanium (tri-) silicide + + Titanium (di-) silicide	6-I	-	-	-	-	-	-	-	-	-	-	-	699-701	703	-	-
Titanium tungsten (di-) carbide + + Cobalt cermet	6-II	-	-	-	-	-	-	-	-	-	881	-	-	-	-	-
Titanium tungsten (di-) carbide + + Tantalum cermet	6-II	-	-	-	-	-	-	-	-	-	883	-	-	-	-	-

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Titanox TG	4-I	-	-	-	-	-	-	-	-	-	462	-	-	-	-	-
Transite	6-II	-	-	-	-	-	-	1216	-	-	-	-	-	-	-	-
Tremolite	4-II	-	-	-	-	-	-	1239	-	-	-	-	-	-	-	-
Trolitul Luv-M150	6-II	-	-	-	-	-	-	970	972	1082	-	-	-	-	-	-
Tungsten (W)	1	1019	1019	-	-	-	1021	1023	1025	1027	1029	-	1031-1038	1040-1042	-	1044
Tungsten, lamp grade	1	-	-	-	-	-	-	-	-	-	-	-	1038	-	-	-
Tungsten coated with hafnium (di-)oxide	6-II	-	-	-	-	-	-	-	-	-	-	-	1377-1379	-	-	-
Tungsten coated with silicide	6-II	-	-	-	-	-	-	-	-	-	-	-	1485-1487	1489	-	-
Tungsten coating on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1329	1331	-	-
Tungsten coating on iron	6-II	-	-	-	-	-	-	-	-	-	-	1325	1327	-	-	-
Tungsten + ΣX_i	2-II	1516	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten + Cobalt	2-I	-	-	-	-	-	-	-	-	-	565	-	-	-	-	-
Tungsten + Copper	2-I	-	-	-	-	-	-	-	-	-	567	-	-	-	-	-
Tungsten + Molybdenum	2-I	-	-	-	-	-	-	-	-	-	-	-	569-573	-	-	-
Tungsten + Nickel + ΣX_i	2-II	1510	-	-	-	-	-	-	1512	-	1514	-	-	-	-	-
Tungsten + Niobium	2-I	-	575	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten + Rhenium	2-I	-	-	-	-	-	577	-	-	-	-	-	-	-	-	-
Tungsten alloys (special design.)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B50YA12B	2-II	-	-	-	-	-	-	-	-	-	1514	-	-	-	-	-
Heavy alloy	2-II	-	-	-	-	-	-	-	-	-	1514	-	-	-	-	-
Mallory 1000	2-II	-	-	-	-	-	-	-	-	-	1514	-	-	-	-	-
Tungsten aluminide (WAl)	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten arsenide (W_2As_3)	6-I	-	-	-	-	-	96	-	-	-	-	-	-	-	-	-
Tungsten borides																
WB	6-I	-	250	-	-	-	252	254	258	260	262	-	264	-	-	-
WB_2	6-I	-	250	-	-	-	-	-	-	-	-	-	-	-	-	-
W_2B	6-I	-	250	-	-	-	-	256	-	-	-	-	-	-	-	-
W_2B_5	6-I	-	250	-	-	-	-	256	-	-	-	-	-	-	-	-
Tungsten carbides																
WC	5	195	195	-	-	-	197	199	201	-	203	-	205-209	-	-	215
W_2C	5	-	195	-	-	-	-	-	-	-	203	-	211-213	-	-	-
Tungsten carbide coating on iron	6-II	-	-	-	-	-	-	-	-	-	-	1421	1423	-	-	-
Tungsten carbide + Chromium-cobalt alloys cermet	6-II	-	-	-	-	-	-	-	-	-	895	-	-	-	-	-
Tungsten carbide + Cobalt cermet	6-II	-	-	-	-	-	-	-	889	-	897-905	-	-	-	-	-

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Tungsten carbide + Nickel cermet	6-II	-	-	-	-	-	-	-	-	-	907	-	-	-	-	-
Tungsten-cobalt alloy coating on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1341	1343	-	-
Tungsten-cobalt intermetallics (WCo_2)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten iron lead oxide ($3\ PbO \cdot Fe_2O_3\ WO_3$)	4-II	-	-	-	-	-	-	-	-	-	1159	-	-	-	-	-
Tungsten nitride (WN)	5	-	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten oxides																
WO_2	4-I	-	-	-	-	-	-	-	-	-	485	-	-	-	-	-
WO_3	4-I	-	-	-	-	-	-	481	483	-	485	-	-	-	-	-
$W_{18}O_{49}$	4-I	-	-	-	-	-	-	-	-	-	485	-	-	-	-	-
$W_{20}O_{58}$	4-I	-	-	-	-	-	-	-	-	-	485	-	-	-	-	-
Tungsten (tri-)oxide + Zinc oxide	4-I	-	-	-	-	-	-	-	874	-	-	-	-	-	-	-
Tungsten phosphide (WP) . . .	5	635	636	-	-	-	639	-	-	-	-	-	-	-	-	-
Tungsten selenide (WSe_2). . . .	6-I	-	-	-	-	-	359	-	361	-	-	-	-	-	-	-
Tungsten selenide tellurides ($WSe_{2-x}Te_x$)	6-I	-	-	-	-	-	634	-	-	-	-	-	-	-	-	-
Tungsten silicides																
WSi	6-I	-	491	-	-	-	-	-	-	-	-	-	-	-	-	-
WSi_2	6-I	-	491	-	-	-	-	493	495	-	497	-	-	499	-	-
W_5Si_2	6-I	-	491	-	-	-	-	-	-	-	-	-	-	-	-	-
W_5Si_3	6-I	-	491	-	-	-	-	-	-	-	-	-	-	-	-	-
Tungsten tellurides (WTe_2) . . .	6-I	-	-	-	-	-	638	-	640	-	-	-	-	-	-	-
Tungsten-zirconium intermetallics (W_2Zr)	6-I	-	684	-	-	-	-	-	-	-	-	-	-	-	-	-
U																
Udimet 500	2-II	-	-	-	-	-	-	-	1134	-	-	-	1201, 1233	1213, 1236	-	-
Udimet 600	2-II	-	-	-	-	-	-	-	1134	-	-	-	-	-	-	-
Uranium (U)	1	1046	1046	-	-	-	1049	1051	1053	1056	1058	-	1061-1063	-	-	-
Uranium + ΣX_i	2-II	-	-	1544	1544	1544	-	-	-	-	-	-	-	-	-	1546
Uranium + Chromium	2-I	579	579	-	-	-	581	583	585	-	587	-	-	-	-	-
Uranium + Iron	2-I	589	-	-	-	-	-	-	-	-	591	-	-	-	-	-
Uranium + Magnesium	2-I	-	-	-	-	-	-	-	593	-	595	-	-	-	-	-
Uranium + Molybdenum . . .	2-I	599	597	-	-	-	601	603	605	-	607-615	-	-	-	-	-
Uranium + Molybdenum + ΣX_i. .	2-II	-	1518	-	-	-	-	-	1520	-	1522-1526	-	-	-	-	-
Uranium + Niobium	2-I	-	617	-	-	-	-	-	619	-	-	-	621-623	-	-	-
Uranium + Plutonium + ΣX_i . .	2-II	-	1528	-	-	-	-	-	-	-	1530	-	-	-	-	-

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Uranium + Thorium + ΣX_i	2-II	-	1532	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium + Zirconium	2-I	625	-	-	-	-	627	-	629	-	631-641	-	-	-	-	-
Uranium + Zirconium + ΣX_i	2-II	-	1534	-	-	-	1536	-	1538	-	-	-	1540-1542	-	-	-
Uranium alloys (special design)																
Fissium alloy	2-II	-	1518	-	-	-	-	-	1520	-	-	-	-	-	-	-
U-3% FS	2-II	-	-	-	-	-	-	-	1520	-	-	-	-	-	-	-
U-5% FS	2-II	-	-	-	-	-	-	-	1520	-	-	-	-	-	-	-
U-5% FS - 2.25 Zr	2-II	-	-	-	-	-	-	-	1538	-	-	-	-	-	-	-
U-8% FS	2-II	-	-	-	-	-	-	-	1520	-	-	-	-	-	-	-
U-10% FS	2-II	-	-	-	-	-	-	-	1520	-	-	-	-	-	-	-
Uranium aluminides																
UAl_2	6-I	35	35	-	-	-	-	-	-	-	37	-	-	-	-	-
UAl_3	6-I	35	35	-	-	-	-	-	-	-	-	-	-	-	-	-
UAl_4	6-I	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium beryllide (UBe_{13})	6-I	144	-	-	-	-	-	-	146	-	-	-	-	-	-	-
Uranium-bismuth intermetallics																
UBi	6-I	676	676	-	-	-	-	-	-	-	-	-	-	-	-	-
UBi_2	6-I	676	676	-	-	-	-	-	-	-	-	-	-	-	-	-
U_3Bi_4	6-I	676	676	-	-	-	-	-	-	-	-	-	-	-	-	-
U_4Bi_5	6-I	676	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium borides																
UB_2	6-I	-	266	-	-	-	-	-	-	-	268	-	-	-	-	-
UB_4	6-I	266	266	-	-	-	-	-	-	-	-	-	-	-	-	-
UB_{12}	6-I	-	266	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium bromide (UBr_3)	5	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium carbides																
UC	5	217	217	-	-	-	219	223	231	235	237	-	243, 245	-	-	-
UC_2	5	-	217	-	-	-	221	225-227	233	-	239	-	243-245	-	-	-
U_2C_3	5	217	217	-	-	-	-	229	-	-	241	-	-	-	-	-
Uranium (mono-) carbide + Molybdenum cermet	6-II	-	-	-	-	-	-	-	-	-	891	-	-	-	-	-
Uranium (mono-) carbide + Uranium cermet	6-II	-	-	-	-	-	-	-	-	-	893	-	-	-	-	-
Uranium (di-) carbide + Graphite	5	-	-	-	-	-	-	-	743	-	-	-	-	-	-	-
Uranium chlorides																
UCl_3	5	335	-	-	-	-	-	337	-	-	-	-	-	-	-	-
UCl_4	5	335	-	-	-	-	-	337	-	-	-	-	-	-	-	-
Uranium-cobalt intermetallics																
UCo	6-I	676	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U_6Co	6-I	676	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Uranium ferrides																
UFe_2	6-I	306	306	-	-	-	-	-	-	-	-	-	-	-	-	-
U_6Fe	6-I	306	306	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium fluorides																
UF_3	5	-	407	-	-	-	-	-	-	-	-	-	-	-	-	-
UF_4	5	407	407	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium hydride (UH_3).	5	447	-	-	-	-	-	449	-	-	-	-	-	-	-	-
Uranium iodides																
UI_3	5	-	477	-	-	-	-	-	-	-	-	-	-	-	-	-
UI_4	5	-	477	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium-lead intermetallics																
UPb	6-I	676	676	-	-	-	-	-	-	-	-	-	-	-	-	-
UPb_3	6-I	676	676	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium-manganese intermetallics																
UMn_2	6-I	676	676	-	-	-	-	-	-	-	-	-	-	-	-	-
U_6Mn	6-I	676	676	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium-nickel intermetallics (U_6Ni)	6-I	676	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium nitrides																
UN	5	586	586	-	-	-	-	-	588	590	592	-	-	-	-	-
$UN_{1.56-1.65}$	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	594
UN_2	5	586	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U_2N_3	5	586	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium oxides																
UO_2	4-I	488	489	-	-	-	493	495	503-511	515	517	-	520	-	-	522
$UO_{2.03-2.18}$	4-I	-	-	-	-	-	-	-	508	-	517	-	-	-	-	-
UO_3	4-I	488	489	-	-	-	-	497	-	-	-	-	-	-	-	-
U_2O_3	4-I	-	-	-	-	-	493	-	-	-	-	-	-	-	-	-
U_2O_5	4-I	488	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U_3O_8	4-I	488	489	-	-	-	-	499	513	-	-	-	-	-	-	-
U_4O_9	4-I	-	-	-	-	-	-	501	-	-	-	-	-	-	-	-
Uranium (di-)oxide powder. . .	4-I	-	-	-	-	-	-	-	511	-	-	-	520	-	-	-
Uranium (di-)oxide + Beryllium oxide	4-I	-	-	-	-	-	-	-	876	-	878	-	-	-	-	-
Uranium (di-)oxide + Chromium cermet	6-II	-	-	-	-	-	798	-	800	-	802	-	-	-	-	-
Uranium (di-)oxide + + Dysprosium oxide	4-I	-	-	-	-	-	-	-	-	-	880	-	-	-	-	-
Uranium (di-)oxide + Graphite .	5	-	-	-	-	-	-	-	741	-	-	-	-	-	-	-
Uranium (di-)oxide + + Magnesium oxide.	4-I	-	-	-	-	-	-	-	-	-	882	-	-	-	-	-
Uranium (di-)oxide + + Molybdenum cermet	6-II	-	-	-	-	-	804	-	806	-	808	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Uranium (di-)oxide + Niobium cermet	6-II	-	-	-	-	-	810	-	812	-	-	-	-	-	-	-
Uranium (di-)oxide + Stainless steel cermet	6-II	-	-	-	-	-	814	-	816	-	818	-	-	-	-	-
Uranium (di-)oxide + Thorium (di-)oxide	4-I	-	-	-	-	-	884	-	-	-	-	-	-	-	-	-
Uranium (di-)oxide + Thorium (di-)oxide + Yttrium oxide . .	4-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	886
Uranium (di-)oxide + Yttrium oxide	4-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	888
Uranium (di-)oxide + + Zirconium cermet	6-II	820	-	-	-	-	-	-	822	-	824	-	-	-	-	-
Uranium (di-)oxide + + Zirconium (di-)oxide	4-I	-	890	-	-	-	-	-	-	-	892	-	-	-	-	-
Uranium phosphate ($UO_2 \cdot P_2O_5$) .	4-II	-	-	-	-	-	-	-	-	-	1183	-	-	-	-	-
Uranium plutonium carbide ($U_{1-x}Pu_xC$)	5	-	-	-	-	-	247	-	-	-	-	-	-	-	-	-
Uranium silicides																
USi	6-I	501	501	-	-	-	-	-	-	-	509	-	-	-	-	-
USi_2	6-I	501	501	-	-	-	-	505	-	-	509	-	-	-	-	-
USi_3	6-I	501	501	-	-	-	503	505	-	-	509	-	-	-	-	-
U_3Si	6-I	501	501	-	-	-	503	505	507	-	509	-	-	-	-	-
U_3Si_2	6-I	501	501	-	-	-	-	-	-	-	509	-	-	-	-	-
Uranium stannide (USn_3)	6-I	541	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium sulfides																
US	5	722	722	-	-	-	-	-	-		724	-	-	-	-	-
US_2	5	722	722	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium thorium oxide ($Th_{1-x}U_xO_2$)	4-II	-	-	-	-	-	-	-	1161	-	-	-	-	-	-	-
Uranium-titanium intermetallics (U_2Ti)	6-I	-	676	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium zirconium carbide ($U_{1-x}Zr_xC$)	5	-	-	-	-	-	-	-	-	-	-	-	249	-	-	-
Uranium zirconium hydride ($U_{1-x}Zr_xH$)	5	-	-	-	-	-	-	-	-	-	451	-	-	-	-	-
Uranyl oxide	4-I	488	489	-	-	-	-	497	-	-	-	-	-	-	-	-
Urea formaldehyde, alpha cellulose filled	6-II	-	-	-	-	-	-	-	-	-	1002	-	-	-	-	-
V																
Vanadate glass	4-II	-	-	-	-	-	1645	-	-	-	1647	-	-	-	-	-
Vanadium (V)	1	1065	1065	-	-	1065	1067	1069	1071	-	1073	-	1075	1077	-	1079
Vanadium + ΣX_i	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Aluminum	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Antimony	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Chromium	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-

Material Name	Volume	Density	Melting Point	Heat of Fusion	Heat of Vaporization	Heat of Sublimation	Electrical Resistivity	Specific Heat	Thermal Conductivity	Thermal Diffusivity	Thermal Linear Expansion	Thermal Absorptance	Thermal Emittance	Thermal Reflectance	Thermal Transmittance	Vapor Pressure
Vanadium + Copper	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Iron	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Manganese	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Nickel	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Palladium	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Silicon	2-I	-	-	-	-	-	-	-	-	-	645	-	-	-	-	-
Vanadium + Silicon + ΣX_i . . .	2-II	-	-	-	-	-	-	-	1548	-	-	-	-	-	-	-
Vanadium + Tin	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium + Titanium	2-I	647	-	-	-	-	643	-	649	-	651	-	-	-	-	-
Vanadium + Titanium + ΣX_i . .	2-II	-	-	-	-	-	-	-	1550	-	-	-	-	-	-	-
Vanadium + Zirconium	2-I	-	-	-	-	-	643	-	-	-	-	-	-	-	-	-
Vanadium aluminide (V_5Al_8) . .	6-I	-	43	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium beryllide (VBe_{12}) . .	6-I	-	158	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium borides																
VB	6-I	-	270	-	-	-	-	-	-	-	-	-	-	-	-	-
VB_2	6-I	270	270	-	-	-	-	-	-	-	272	-	-	-	-	-
V_3B_2	6-I	-	270	-	-	-	-	-	-	-	-	-	-	-	-	-
V_3B_4	6-I	-	270	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (di-)boride + + Chromium (di-)boride . . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium (di-)boride + + Titanium (di-)boride	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium carbides																
VC	5	251	251	-	-	-	253	255	257	-	259	-	261	-	-	-
V_2C	5	-	251	-	-	-	-	-	-	-	259	-	-	-	-	-
Vanadium germanium lead oxide ($5\ PbO \cdot GeO_2 \cdot V_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1163	-	-	-	-	-
Vanadium hydride (VH)	5	-	-	-	-	-	-	453	-	-	-	-	-	-	-	-
Vanadium-manganese inter-metallics (VMn_2)	6-I	-	685	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium nitride (VN)	5	596	596	-	-	-	-	598	-	-	600	-	-	-	-	-
Vanadium oxides																
VO	4-I	-	-	-	-	524	-	528	-	-	-	-	-	-	-	536
V_2O_3	4-I	-	-	-	-	-	526	530	-	-	-	-	-	-	-	-
V_2O_4	4-I	-	-	-	-	-	-	532	-	-	-	-	-	-	-	-
V_2O_5	4-I	524	524	-	-	-	526	534	-	-	-	-	-	-	-	-
Vanadium (pent-)oxide + + Titanium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	894	-	-	-	-	-
Vanadium phosphide (VP) . . .	5	655	636	-	-	-	639	-	-	-	-	-	-	-	-	-
Vanadium silicides																
VSi	6-I	-	511	-	-	-	-	-	-	-	-	-	-	-	-	-
VSi_2	6-I	-	-	-	-	-	-	513	-	-	515	-	-	-	-	-
V_3Si	6-I	-	511	-	-	-	-	513	-	-	515	-	-	-	-	-
V_5Si_3	6-I	-	511	-	-	-	-	513	-	-	515	-	-	-	-	-

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Vanadium silicon lead oxide ($5\ PbO \cdot SiO_2 \cdot V_2O_5$)	4-II	-	-	-	-	-	-	-	-	-	1165	-	-	-	-	-
Vanadium-zirconium intermetallics (V_2Zr)	6-I	-	685	-	-	-	-	-	-	-	-	-	-	-	-	-
Vermiculite, expanded	4-I	-	-	-	-	-	-	-	814	-	-	-	-	-	-	-
Vinylite VMCH	6-II	-	-	-	-	-	-	-	-	-	950	-	-	-	-	-
Vinylite VYDR	6-II	-	-	-	-	-	-	-	-	-	950	-	-	-	-	-
Vitreous bonded aluminum titanate	5	-	-	-	-	-	949-953	-	-	-	955-977	-	-	-	-	-
Vulcollan	6-II	1051	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vycor no. 790	4-II	-	1651	-	-	-	1653	-	-	-	1663	-	-	-	-	-
Vycor 7900	4-II	-	-	-	-	-	-	1655	-	1661	-	-	1665	1669	1671-1673	-
Vycor glasses	4-II	1651	1651	-	-	-	1653	1655	1657, 1699	1659-1661	1663	-	1665-1667	1669	1671-1673	-
W																
Willemite	4-II	-	-	-	-	-	-	1340	-	-		-	-	-	-	-
Wollastonite	4-II	-	-	-	-	-	-	1229	-	-	-	-	-	-	-	-
Wustite	4-I	-	-	-	-	-	-	-	-	-	222	-	-	-	-	-
Y																
Ytterbia	4-I	538	-	-	-	-	-	540	-	-	542	-	-	-	544	-
Ytterbium (Yb)	1	1081	1081	1081	1081	1081	1083	1085	-	-	-	-	-	-	-	-
Ytterbium + Calcium	2-I	-	-	-	-	-	-	-	-	-	653	-	-	-	-	-
Ytterbium borides																
YbB_4	6-I	295	-	-	-	-	-	-	-		-	-	-	-	-	-
YbB_6	6-I	295	-	-	-	-	300	-	-	-	-	-	-	-	-	-
Ytterbium carbide (YbC_2) . . .	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ytterbium oxide (Yb_2O_3)	4-I	538	-	-	-	-	-	540	-		542	-	-	-	544	-
Ytterbium selenide (YbSe) . . .	6-I	365	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ytterbium sulfide (Yb_2S_3) . . .	5	732	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttria	4-I	546	-	-	-	-	-	548	550	-	552	-	555-559	-	561	-
Yttrium (Y)	1	1087	1087	1087	1087	1087	1089	1091	1093	-	-	-	1095	-	-	1097
Yttrium + ΣX_i	2-II	-	-	-	-	-	-	1554	-	1556	-	-	-	-	-	-
Yttrium + Tantalum	2-I	-	-	-	-	-	-	655	-	-	-	-	-	-	-	-
Yttrium + Terbium	2-I	-	-	-	-	-	657	-	-	-	-	-	-	-	-	-
Yttrium + Terbium + ΣX_i	2-II	1552	-	-	-	-	-	-		-	-	-	-	-	-	-
Yttrium borides																
YB_2	6-I	295	297	-	-	-	-	-	-	-	-	-	-	-	-	-
YB_4	6-I	295	297	-	-	-	-	-	-	-	-	-	-	-	-	-

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Yttrium borides (cont.)																
YB_6	6-I	295	297	-	-	-	300	-	-	-	-	-	-	-	-	-
Yttrium carbides																
YC	5	-	295	-	-	-	-	-	-	-	-	-	-	-	-	-
YC_2	5	294	295	-	-	-	-	-	-	-	-	-	-	-	-	-
Y_2C_3	5	-	295	-	-	-	-	-	-	-	-	-	-	-	-	-
Y_3C	5	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium-cobalt intermetallics																
YCo_2	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YCo_5	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium-copper intermetallics (YCu_5)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium ferride (YFe_5)	6-I	306	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium fluoride (YF_3)	5	407	407	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium-gallium intermetallics (YGa_2)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium germanides (Y_5Ge_3) . .	6-I	323	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium hydrides																
YH_2	5	455	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YH_3	5	455	-	-	-	-	-	457	-	-	-	-	-	-	-	-
Yttrium-manganese intermetallics																
YMn_2	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
YMn_5	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium-nickel intermetallics (YNi_5)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium nitride (YN).	5	621	621	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium-osmium intermetallics (YOs_2)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium oxide (Y_2O_3)	4-I	546	-	-	-	-	-	548	550	-	552	-	555-559	-	561	-
Yttrium oxide + Chromium (sesqui-) oxide	4-I	-	-	-	-	-	-	-	-	-	-	-	896	-	-	-
Yttrium oxide + Uranium (di-) oxide	4-I	-	-	-	-	-	-	-	898	-	-	-	-	-	-	-
Yttrium-rhodium intermetallics (YRh)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium silicides																
YSi	6-I	523	524	-	-	-	-	-	-	-	-	-	-	-	-	-
YSi_2	6-I	523	524	-	-	-	-	-	-	-	-	-	-	-	-	-
Y_3Si_5	6-I	-	524	-	-	-	-	-	-	-	-	-	-	-	-	-
Y_5Si_3	6-I	523	524	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium-silver intermetallics (YAg)	6-I	681	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Yttrium sulfides																
YS	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
YS_2	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
Y_2S_3	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
Y_5S_7	5	732	732	-	-	-	-	-	-	-	-	-	-	-	-	-
Yttrium tellurides (Y_2Te_3)	6-I	-	-	-	-	-	638	-	-	-	-	-	-	-	-	-
Z																
Zinc + Copper	2-I	-	-	-	-	-	659	-	-	-	-	-	-	-	-	-
Zinc + Silver	2-I	-	661	661	-	-	-	-	-	-	-	-	-	-	-	-
Zinc + Zirconium	2-I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	663
Zinc aluminate ($ZnO \cdot Al_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	1033	-	-	-	-	-
Zinc antimonide (ZnSb)	6-I	-	-	-	-	-	75	-	77	-	-	-	-	-	-	79
Zinc chromate ($ZnO \cdot Cr_2O_3$)	4-II	-	-	-	-	-	-	-	-	-	1063	-	-	-	-	-
Zinc chromate spinal	4-II	-	-	-	-	-	-	-	-	-	1063	-	-	-	-	-
Zinc ferrite ($ZnO \cdot Fe_2O_3$)	4-II	-	-	-	-	-	1099	1101	1103	-	1105	-	-	-	-	-
Zinc fluoride (ZnF_2)	5	407	407	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc germanide oxide ($2\,ZnO \cdot GeO_2$)	4-II	-	-	-	-	-	-	-	-	-	1167	-	-	-	-	-
Zinc germanium oxide + + Magnesium germanium oxide	4-II	-	-	-	-	-	-	-	-	-	1556	-	-	-	-	-
Zinc germanium oxide + Zinc (ortho-) silicate	4-II	-	-	-	-	-	-	-	-	-	1558	-	-	-	-	-
Zinc lead silicate glass	4-II	-	-	-	-	-	1825	-	-	-	-	-	-	-	-	-
Zinc magnesium aluminum borosilicate glass	4-II	-	-	-	-	-	-	-	-	-	1727	-	-	-	-	-
Zinc oxide (ZnO)	4-I	-	-	-	-	-	563	-	565	-	567	-	569	-	-	-
Zinc oxide + Magnesium oxide	4-I	-	-	-	-	-	-	-	900	-	-	-	-	-	-	-
Zinc oxide + Strontium oxide + + Lithium zirconium silicate	4-II	-	-	-	-	-	-	-	1554	-	-	-	-	-	-	-
Zinc oxide + Tin(ic) oxide	4-I	-	-	-	-	-	-	-	902	-	-	-	-	-	-	-
Zinc oxide + Tin(ic) oxide + + Magnesium oxide	4-I	-	-	-	-	-	-	-	904	-	-	-	-	-	-	-
Zinc selenide (ZnSe)	6-I	-	-	-	-	-	-	-	-	-	363	-	-	-	-	-
Zinc (ortho-) silicate ($2\,ZnO \cdot SiO_2$)	4-II	-	-	-	-	-	-	1340	-	-	1342	-	-	-	-	-
Zinc (ortho-) silicate + + Magnesium (ortho-) silicate	4-II	-	-	-	-	-	-	-	-	-	1575	-	-	-	-	-
Zinc sulfide (ZnS)	5	-	-	-	-	-	726	-	-	-	-	-	-	728-730	-	-
Zinc (ortho-) titanate ($2\,ZnO \cdot TiO_2$)	4-II	-	-	-	-	-	-	1468	-	-	-	-	-	-	-	-
Zircaloy 2	2-I	-	-	-	-	-	699	702	704	-	-	-	709-714	-	-	-
Zircaloy 2, low nickel	2-I	-	-	-	-	-	-	702	-	-	-	-	-	-	-	-

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Zircaloy 4	2-I	-	-	-	-	-	-	702	-	-	-	-	-	-	-	-
Zircon	4-II	1344	-	-	-	-	1346	1348	-	-	-	-	-	-	-	-
Zircon 475	4-II	1344	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zircon CZ-5, Taylor	4-II	-	-	-	-	-	-	1348	1350	-	1352	-	-	-	-	-
Zircon + Beryl	4-II	-	-	-	-	-	-	-	-	-	1577	-	-	-	-	-
Zirconia	4-I	571	571	-	-	571	574	576	578	580	582-587	-	589-593	595	-	597
Zirconium (Zr)	1	1099	1099	-	-	1099	1102	1104	1106	1109	1111	-	1113-1117	-	-	1119
Zirconium no. 715	1	-	-	-	-	-	-	-	1106	-	-	-	-	-	-	-
Zirconium + ΣX_i	2-II	1580	-	-	-	-	1582	-	1584	-	1586	-	-	-	-	-
Zirconium + Aluminum	2-I	-	-	-	-	-	665	-	667	-	-	-	-	-	-	-
Zirconium + Aluminum + ΣX_i . .	2-II	1558	-	-	-	-	1560	-	1562	-	-	-	-	-	-	-
Zirconium + Boron	2-I	669	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium + Hafnium	2-I	671	-	-	-	671	673	675	-	-	677	-	-	-	-	-
Zirconium + Hafnium + ΣX_i . .	2-II	-	-	-	-	-	-	1566	-	-	-	-	-	-	-	-
Zirconium + Indium	2-I	-	-	-	-	-	-	679	-	-	-	-	-	-	-	-
Zirconium + Iron + ΣX_i	2-II	-	-	-	-	-	-	1568	-	-	-	-	-	-	-	-
Zirconium + Molybdenum . . .	2-I	-	-	-	-	-	681	-	683	-	-	-	-	-	-	-
Zirconium + Niobium	2-I	-	-	-	-	-	685	687	689	-	-	-	-	-	-	-
Zirconium + Silver	2-I	-	-	-	-	-	-	691	-	-	-	-	-	-	-	-
Zirconium + Tantalum + ΣX_i . .	2-II	-	-	-	-	-	1570	-	-	-	-	-	-	-	-	-
Zirconium + Thorium	2-I	-	-	-	-	-	-	-	-	-	693-695	-	-	-	-	-
Zirconium + Tin	2-I	697	-	-	-	-	699	702	704	-	707	-	709-714	-	-	-
Zirconium + Tin + ΣX_i	2-II	-	-	-	-	-	1572	-	-	-	-	-	-	-	-	-
Zirconium + Titanium	2-I	-	-	-	-	-	-	715	-	-	-	-	-	-	-	-
Zirconium + Uranium	2-I	717	-	-	-	-	719	721	723	-	725	-	-	-	-	-
Zirconium + Uranium + ΣX_i . .	2-II	-	-	-	-	-	-	1574	-	-	-	-	1576-1578	-	-	-
Zirconium alloys (special designations)																
3ZI	2-II	1558	-	-	-	-	1560	-	1562	1564	-	-	-	-	-	-
Zircaloys (see Zircaloy)																
Zirconium aluminides																
$ZrAl_2$	6-I	-	39	-	-	-	-	-	-	-	41	-	-	-	-	-
$ZrAl_3$	6-I	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_2Al_3	6-I	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_3Al_2	6-I	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_3Al_4	6-I	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium beryllides																
$ZrBe_6$	6-I	-	148	-	-	-	-	-	-	-	-	-	-	-	-	-
$ZrBe_9$	6-I	-	148	-	-	-	-	-	-	-	-	-	-	-	-	-

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Zirconium berylllides (cont.)																
$ZrBe_{13}$	6-I	-	148	-	-	-	-	160	152	-	154	-	-	156	-	-
$ZrBe_{16}$	6-I	-	148	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_2Be_{17}	6-I	-	-	-	-	-	-	-	-	-	-	-	-	156	-	-
Zirconium borides																
ZrB	6-I	-	-	-	-	-	-	-	281	-	-	-	-	-	-	-
ZrB_2	6-I	274	274	-	274	-	277	279	-	-	283	-	286-288	291	-	293
ZrB_{12}	6-I	274	274	-	-	-	277	-	281	-	-	-	-	-	-	-
Zirconium (di-)boride cermet .	6-I	842	-	-	-	-	844	846	848	-	850	-	-	-	-	-
Zirconium (di-)boride + + Molybdenum (di-)boride . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium (di-)boride + + Molybdenum (di-)silicide . .	6-I	-	689	-	-	-	-	-	-	-	691	-	-	-	-	-
Zirconium (di-)boride + + Niobium (di-)boride	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium (di-)boride + + Tantalum (di-)boride. . . .	6-I	723	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium carbide (ZrC). . . .	5	263	263	-	-	-	265	267	269	271	273	-	277-283	-	-	285
Zirconium (pyro-) carbide . . .	5	-	-	-	-	-	-	-	-	-	273	-	-	-	-	-
Zirconium carbide + Graphite .	5	-	-	-	-	-	-	-	-	-	825	-	-	-	-	-
Zirconium-cobalt intermetallics ($ZrCo_2$)	6-I	-	685	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium ferride ($ZrFe_2$) . . .	6-I	-	306	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium fluoride (ZrF_4) . . .	5	407	407	-	-	407	-	-	-	-	-	-	-	-	-	-
Zirconium fluoride + Lithium fluoride	5	-	413	-	-	-	-	-	-	-	-	-	-	-	-	415
Zirconium fluoride + Rubidium fluoride	5	-	417	-	-	-	-	-	-	-	-	-	-	-	-	419
Zirconium fluoride + Sodium fluoride	5	-	421	-	-	-	-	-	-	-	-	-	-	-	-	423
Zirconium germanides																
ZrGe	6-I	-	323	-	-	-	-	-	-	-	-	-	-	-	-	-
$ZrGe_2$	6-I	-	323	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_3Ge	6-I	-	323	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_5Ge_3	6-I	-	323	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium hydride (ZrH_2) . . .	5	459	-	-	-	-	-	461	463	-	465	-	-	-	-	-
Zirconium nitride (ZrN)	5	602	602	-	-	-	-	604	606	608	610	-	613-615	-	-	617-619
Zirconium (di-)oxide (ZrO_2) . .	4-I	571	571	-	-	571	574	576	578	580	582-587	-	589-593	595	-	597
Zirconium (di-)oxide foam . . .	4-I	-	-	-	-	-	-	-	-	-	587	-	-	-	-	-
Zirconium (di-)oxide mix 148 .	4-I	-	-	-	-	-	-	-	916	-	-	-	-	-	-	-
Zirconium (di-)oxide mix 187 .	4-I	-	-	-	-	-	-	-	916	-	-	-	-	-	-	-

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Zirconium (di-)oxide Norton mix 302	4-I	-	-	-	-	-	-	-	-	580	-	-	-	-	-	-
Zirconium (di-)oxide ZP-58 . .	5	-	-	-	-	-	-	799	-	-	-	-	-	-	-	-
Zirconium (di-)oxide ZP-74 . .	5	-	-	-	-	-	-	799	-	-	-	-	-	-	-	-
Zirconium (di-)oxide coating on Inconel	6-II	-	-	-	-	-	-	-	-	-	-	-	-	1397	-	-
Zirconium (di-)oxide coating on Inconel X	6-II	-	-	-	-	-	-	-	-	-	-	-	1399	1401	-	-
Zirconium (di-)oxide + ΣX_i . .	5	-	-	-	-	-	-	799	-	-	-	-	-	-	-	-
Zirconium (di-)oxide + Aluminum oxide	4-I	-	-	-	-	-	-	-	-	906	908	-	-	-	-	-
Zirconium (di-)oxide + + Beryllium oxide + Aluminum oxide	4-I	-	-	-	-	-	-	-	-	-	910	-	-	-	-	-
Zirconium (di-)oxide + Calcium oxide	4-I	-	-	-	-	-	912	914	916	918	920	-	923	-	-	-
Zirconium (di-)oxide + Calcium oxide + Cerium (di-)oxide . .	4-I	-	-	-	-	-	-	-	925	-	-	-	-	-	-	-
Zirconium (di-)oxide + Calcium oxide + Silicon (di-)oxide . .	4-I	-	-	-	-	-	-	-	-	-	927	-	-	-	-	-
Zirconium (di-)oxide + Cerium (di-)oxide	4-I	-	-	-	-	-	-	-	-	929	931	-	-	-	-	-
Zirconium (di-)oxide + + Dysprosium oxide	4-I	-	-	-	-	-	-	-	-	-	934	-	-	-	-	-
Zirconium (di-)oxide + Hafnium + + Magnesium	5	-	-	-	-	-	-	797	-	-	-	-	-	-	-	-
Zirconium (di-)oxide + Hafnium (di-)oxide	4-I	-	936	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium (di-)oxide + + Magnesium oxide	4-I	-	-	-	-	-	938	-	940	942	944	-	-	-	-	-
Zirconium (di-)oxide + + Magnesium oxide + Beryllium oxide	4-I	-	947	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium (di-)oxide + Niobium (pent-)oxide	4-I	-	949	-	-	-	-	-	-	-	951	-	-	-	-	-
Zirconium (di-)oxide + + Phosphorus (pent-)oxide . .	4-I	-	-	-	-	-	-	-	-	-	953	-	-	-	-	-
Zirconium (di-)oxide + Silicon (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	955	-	-	-	-	-
Zirconium (di-)oxide + Thorium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	958	-	-	-	-	-
Zirconium (di-)oxide + Titanium cermet	6-II	-	-	-	-	-	-	826	828	830	832	-	-	-	-	-
Zirconium (di-)oxide + Titanium (di-)oxide	4-I	-	-	-	-	-	-	-	-	-	960	-	-	-	-	-
Zirconium (di-)oxide + Uranium (di-)oxide	4-I	962	964	-	-	-	-	-	-	-	966	-	-	-	-	-
Zirconium (di-)oxide + Yttrium oxide	4-I	-	-	-	-	-	-	-	968	-	970	-	-	-	-	-
Zirconium (di-)oxide + Yttrium oxide + Cerium (di-)oxide . .	4-I	-	-	-	-	-	-	-	972	-	-	-	-	-	-	-

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Zirconium (di-)oxide + Yttrium oxide + Zirconium cermet. . .	6-II	-	-	-	-	-	-	-	834	-	-	-	-	-	-	-
Zirconium (di-)oxide + + Zirconium cermet	6-II	-	-	-	-	-	-	-	-	836	838	-	-	-	-	840
Zirconium (di-)oxide ZT-15-M cermet	6-II	-	-	-	-	-	-	826	-	830	-	-	-	-	-	-
Zirconium phosphates																
$ZrO_2 \cdot P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1185	-	-	-	-	-
$2\ ZrO_2 \cdot P_2O_5$	4-II	-	-	-	-	-	-	-	-	-	1185	-	-	-	-	-
Zirconium (ortho-) silicate ($ZrO_2 \cdot SiO_2$)	4-II	1344	1344	-	-	-	1346	1348	1350	-	1352	-	-	-	-	-
Zirconium (ortho-) silicate + + Beryllium aluminum silicate	4-II	-	-	-	-	-	-	-	-	-	1577	-	-	-	-	-
Zirconium silicides																
ZrSi	6-I	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$ZrSi_2$	6-I	517	517	-	-	-	-	-	-	-	519	-	-	521	-	-
Zr_2Si	6-I	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_3Si_2	6-I	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_4Si	6-I	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_4Si_3	6-I	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_5Si_3	6-I	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zr_6Si_5	6-I	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirconium tantalum carbide ($Ta_xZr_yC_z$)	5	-	-	-	-	-	-	-	-	-	287	-	290	-	-	-
Zirconium titanate ($ZrO_2 \cdot TiO_2$).	4-II	-	-	-	-	-	-	-	-	-	1470	-	-	-	-	-
Zirconium uranium carbide ($Zr_xU_{1-x}C$)	5	-	-	-	-	-	292	-	-	-	-	-	-	-	-	-
Zirconium-vanadium intermetallics (ZrV_2)	6-I	-	685	-	-	-	-	-	-	-	-	-	-	-	-	-
Zirox, grade A	4-I	-	-	-	-	-	-	-	-	-	582	-	-	-	-	-
ZT-15-M zirconium (di-)oxide cermet	6-II	-	-	-	-	-	-	826	-	830	-	-	-	-	-	-